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## INCIDENCE OF SPIROCHAETA PALLIDA IN CEREBROSPINAL FLUID DURING EARLY STAGE OF SYPHILIS*


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It is now universally admitted that the causative agent of syphilis may invade the central nervous system during the early stage of the disease at the time of the general dissemination of the organism. This fact has been proved by (*a*) the occurrence at such a time of clinical signs of disease of the central nervous system; (*b*) the presence of abnormalities of the cerebrospinal fluid, and (*c*) the recovery of the organism itself from the spinal fluid. There is already an extensive literature dealing with the first two phases of the question, and no detailed reference need be made to them in this communication. It is our purpose to deal with the last-named aspect of the question, namely, the occurrence of *Spirochaeta pallida* in the spinal fluid of patients with early untreated syphilis, and to report the results of a series of inoculations of rabbits with such fluid.

### HISTORY

As early as 1905, the year in which *Spirochaeta pallida* was described, attempts were made to demonstrate the presence of this micro-organism in the spinal fluid of patients with syphilis. The earlier attempts were confined to the demonstration of the parasite by staining methods or by dark field examination, and they were largely unsuccessful, although a few positive results were obtained.

The first successful animal inoculation with spinal fluid from a patient with syphilis, so far as we have been able to find from a survey of the literature, was accomplished in 1906 by Hoffman,[1] who used an ape for this purpose. Following the introduction of the use of the rabbit for the inoculation of syphilitic material and the demonstration of living spirochetes, the number of positive results increased. For the most part, however, these results have been scattering, and are of little value in giving one an idea of the frequency with which the micro-organisms may be demonstrated in the spinal fluid during the early period of the disease. For the sake of brevity, these successful attempts are given in tabular form (Table 1), no mention being made of the numerous unsuccessful attempts that have been reported.

A study of Table 1 shows that the only observations carried out on a series of cases of early syphilis which are sufficiently large to permit statistical evaluation, are those of Uhlenhuth and Mulzer,[2] Steiner,[3] Arzt and Kerl,[4] Fruhwald and Zaloziecki,[5] and Warthin, Wanstrom and Buffington.[6] The last-named investigators studied spinal fluids from patients investigated by Wile and Kirchner,[7] and used a method whereby an artificial coagulum was produced in the spinal fluid, this coagulum being examined by histologic methods perfected by Warthin. The others used the rabbit inoculation method. Positive results were obtained with fluid from patients suffering with early syphilis by all these workers, even when the fluid was normal.

### THE PROBLEM

The demonstration by Steiner, Arzt and Kerl, and Fruhwald and Zaloziecki, that *Spirochaeta pallida* can be recovered from the spinal fluid of patients with early syphilis in from 15 to 20 per cent. of the cases, although the spinal fluid itself is entirely negative to the usual laboratory tests, seemed to us of sufficient importance to warrant further study, since this fact, if true, is of no small importance from the standpoint of the question of early involvement of the central nervous system. Moreover, it raises the question how much significance may be attached to the occurrence of normal findings in the spinal fluid in early syphilis, as indicating the absence of invasion of the central nervous system by spirochetes.

For these reasons, it seemed advisable to undertake the study of a larger series of patients having early syphilis, and yet whose spinal fluids were normal so far as the ordinary tests were concerned, in order to determine the frequency with which virulent spirochetes can be recovered from such fluids by rabbit inoculation. It was hoped that perhaps the percentage of positive results might be increased by a modification of the usual rabbit inoculation test.

The investigation had been under way almost a year when Warthin and his collaborators[6] reported the results of their study of the spinal fluid of patients with syphilis, using an entirely different method. The appearance of their work affords an opportunity of com-


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* This paper, together with the papers by Drs. James Russell Driver and George W. Raiziss, constitute part of a symposium on syphilis. The remaining papers, by Drs. Karl G. Zwick, Udo J. Wile and Lester M. Wieder, and John H. Stokes and Loren W. Shaffer, together with the discussion, will appear next week.

1. Hoffman, E.: Dermat. Ztschr. **13**: 561, 1906.
2. Uhlenhuth, P., and Mulzer, P.: Centralbl. f. Bakteriol. **57**: 158, 1913.
3. Steiner: Neurol. Centralbl. **33**: 132, 1914.
4. Arzt and Kerl: Wien. klin. Wchnschr. **27**: 785, 1914.
5. Fruhwald and Zaloziecki: Berl. klin. Wchnschr. **53**: 8, 1916.
6. Warthin, A. S.; Wanstrom, R. C., and Buffington, F.: Application of Warthin-Starry Silver-Agar Methods to Demonstration of Spirochaeta Pallida in Spinal Fluid by Means of Coagula Obtained by Alzheimer Method, Arch. Dermat. & Syph. **8**: 461 (Oct.) 1923.
7. Wile, U. J., and Kirchner, A.: New Method for Demonstration of Spirochaeta Pallida in Spinal Fluid, Arch. Dermat. & Syph. **8**: 831 (Dec.) 1923.

paring roughly the efficacy of the two methods for demonstrating spirochetes in the spinal fluid.

TECHNIC

For the purposes of inoculation, only fluids that were normal according to all tests were used. A preliminary cell count was made and, if the count was below 9 per cubic millimeter, the fluid was injected immediately (without centrifugating) into one or both testes of each of two normal rabbits. From 0.75 to 3.0 c.c. was injected into each rabbit. The original animals were kept under observation for a period of ninety days. If, by the end of that time, no evidence of a successful inoculation had appeared, the popliteal nodes and portions of the inoculated testes were removed under ether anesthesia, emulsified in salt solution and combined in one mixture, and the resulting emulsion was inoculated intratesticularly into each of two normal rabbits. These rabbits were also kept under observation for a period of ninety days before being discarded.

The reason for carrying out these secondary inoculations was as follows: It was thought that possibly the

TABLE 1.—*Instances in Which Spirochaeta Pallida Has Been Found in Cerebrospinal Fluid*

| Authors | Reference | Stage of Disease | No. of Cases Studied | Positive | Negative | Method of Study | Comment |
|---|---|---|---|---|---|---|---|
| Dohi and Tanaka, cited by Fruhwald | Jap. Etschr. f. Derm. vol. 5, 1905 | Early syphilis | 7 | 1 | 0 | Giemsa stain | |
| Babes and Pinea | Berl. Klin. Wehnschr. 42 : 865, 1905 | Congenital syphilis | 1 | 1 | 0 | Microscopic examination | Arachnoid fluid at necropsy |
| Schridde | München. med. Wehnschr. 52 : 1563, 1905 | Congenital syphilis, 3 days old | 1 | 1 | 0 | Microscopic examination | |
| Hoffman, E. | Dermat. Ztschr. 1906, p. 561 | Early syphilis | 1 | 1 | 0 | Ape inoculation | |
| Sezary and Pallard. | Compt. rend. Soc. de biol. 68 : 295, 1910 | Early syphilis | 1 | 1 | 0 | Dark field | Patient had hemiplegia and papular syphilid |
| Gaucher and Merle | Ann. mal. ven. 5 : 476, 1910 | Syphilis, 7 months duration; hemiplegia | 1 | 1 | 0 | Dark field | Fluid obtained at necropsy |
| Bach | Jahrb. f. Kinderh. 75 : 222, 1912 | Congenital syphilis with syphilitic meningitis | 1 | 1 | 0 | Dark field | |
| Levaditi, Marie and Bankowski | Ann. de l'Inst. Pasteur 27 : 576, 1913 | General paralysis | 1 | 1 | 0 | | Ventricular fluid obtained at necropsy |
| Graves | J. A. M. A. 61 : 1504, 1913 | Central nervous system syphilis, 10 years after infection | Not stated | 1 | 0 | Dark field | |
| Volk | Wien. klin. Wehnschr. 26 : 1824, 1913 | General paralysis | 5 | 1 | 4 | Rabbit inoculation | |
| Uhlenhuth and Mulzer | Centralbl. f. Bakteriol. 57 : 156, 1913 | "Recent" syphilis | 8 | 1 | 7 | Rabbit inoculation | Lymphocytosis of fluid in positive case; neurorecurrence ? |
| Nichols and Hough. | J. A. M. A. 60 : 168, 1913 | Neurorecurrence 8 months after infection | 1 | 1 | 0 | Rabbit inoculation | Lymphocytosis and increased globulin in fluid |
| Steiner | Neurol. Centralbl. 33 : 122, 1914 | Early syphilis | 29 | 3 | 17 | Rabbit inoculation | Fluids all normal |
| | | Central nervous system syphilis | 19 | 0 | 19 | | |
| Arzt and Kerl | Wien. klin. Wehnschr. 27 : 785, 1914 | Early syphilis | 11 | 2 | 9 | Rabbit inoculation | |
| Arzt, Kerl and Mattauschek | Wien. klin. Wehnschr. 27 : 787, 1914 | Central nervous system syphilis (2); general paralysis (6); tabes (3) | 11 | 4 | 7 | Rabbit inoculation | Two positive inoculations with fluid from cases of general paralysis; two positive inoculations with fluid from tabetic patients |
| Marinesco and Minea | Acad. de sc. med. 1914, p. 357 | Juvenile general paralysis | 1 | 1 | 0 | Rabbit inoculation | |
| Fruhwald and Zaloziecki | Berl. klin. Wehnschr. 53 : 6, 1916 | Primary syphilis, up to 8 weeks duration | 6 | 0 | 6 | Rabbit inoculation | |
| | | Secondary syphilis, 6 to 10 weeks duration; fresh eruption | 4 | 1 | 3 | Rabbit inoculation | |
| | | Secondary syphilis, duration ½ to 1½ years | 7 | 2 | 5 | Rabbit inoculation | Wassermann positive in spinal fluid in one case with positive inoculation |
| | | Tertiary syphilis, duration 5 years | 1 | 0 | 1 | Rabbit inoculation | |
| | | Central nervous system syphilis | 3 | 1 | 2 | Rabbit inoculation | Positive inoculation was in a case of general paralysis |
| Reasoner | J. A. M. A. 67 : 1720, 1916 | Syphilitic meningitis; neurorecurrence | 1 | 1 | 0 | Rabbit inoculation | |
| | | Central nervous system syphilis | 2 | 0 | 0 | Rabbit inoculation | |
| | | General paralysis | 4 | 0 | 0 | Rabbit inoculation | |
| Wile | Am. J. Syphilis 1 : 84, 1917 | Central nervous system syphilis | 2 | 2 | 0 | Rabbit inoculation | One case was neurorecurrence |
| | | General paralysis | 3 | 2 | 1 | Rabbit inoculation | |
| | | Tabes dorsalis | 3 | 1 | 2 | Rabbit inoculation | |
| Joers | Dermat. Wehnschr. 71 : 966, 1920 | Syphilitic meningitis; neurorecurrence | 1 | 1 | 0 | Dark field | Fluid tests positive |
| Ivers | Dermat. Wehnschr. 71 : 46, 1920 | Syphilitic meningitis | 1 | 1 | 0 | Dark field | Fluid tests positive |
| Warthin, Wanstrom and Buffington and | Arch. Dermat. & Syph. 8 : 461, 1923 | Hereditary syphilis | 8 | 0 | 8 | Study of sections of clot stained for treponemes | |
| | | Latent syphilis, asymptomatic | 20 | 0 | 20 | | |
| | | Primary syphilis; Wassermann negative | 4 | 1 | 3 | | |
| Wile and Kirchner | Arch. Dermat. & Syph. 8 : 821, 1923 | Primary syphilis; Wassermann positive | 1 | 1 | 0 | | |
| | | Secondary syphilis; fluid negative | 15 | 4 | 11 | | |
| | | Secondary syphilis; fluid positive | 5 | 1 | 4 | | |
| | | Late syphilis, not cerebrospinal | 6 | 1 | 5 | | |
| | | Central nervous system syphilis as follows: | | | | | |
| | | Late | 22 | 2 | 20 | | |
| | | Tabes dorsalis | 3 | 1 | 2 | | |
| | | Taboparalysis | 3 | 0 | 0 | | |
| | | General paralysis | 4 | 1 | 3 | | |
| | | Suspected syphilis; blood Wassermann negative | 14 | 0 | 14 | | |

original animals might be infected by a fluid containing spirochetes, but that they might be so few in number or of such a low degree of virulence that they would evoke in the testis of the rabbit a reaction that might be so slight as to be easily missed. By transferring testis and popliteal lymph nodes of such an animal to normal animals, it was thought that the infection, if it existed, might be conveyed to and be recognized in the normal animals, since it is well known that, in the rabbit, *Spirochaeta pallida* can produce a systemic infection with lymph node involvement and remain viable in the lymph nodes for years.[8]

Although the use of this technic prolonged the period of observation and necessitated twice the number of animals, its adoption seems to us to have been justified by the fact that two spinal fluids were thus proved to be positive, which otherwise would have been regarded as negative, if the primary inoculation had been the sole criterion of infectivity of the fluid.

## RESULTS

The spinal fluids of thirty-four patients with untreated early syphilis were inoculated into rabbits in the manner described above. In each instance, the spinal fluid was normal as regards cell count, globulin, Wassermann reaction and mastic curve. (Wassermann reactions were carried out with 1 c.c. of fluid, the total amount of the reagents in the tube being 1.8 c.c.) Each patient showed one or more of the clinical signs of secondary syphilis, and in all of them, there was a positive blood Wassermann reaction. In none was there any objective evidence of involvement of the central nervous system. The duration of the infection, so far as could be determined by careful histories, varied from three weeks to six months, although in many of the women the duration could not be ascertained. The duration of the secondary manifestations varied from one day to ten weeks. Of the thirty-four patients, nine were white and twenty-five were colored. There were eighteen males and sixteen females.

Positive inoculations were obtained with five of the thirty-four fluids. In three instances, these were obtained in rabbits inoculated in the first series. The remaining two positive results were obtained in the subinoculations as previously described. The incubation period with the rabbits of the first series was forty-nine, sixty, and sixty-four days, respectively. In no instance did both rabbits inoculated with fluid from one patient come down with an orchitis. It is conceivable that a slightly higher percentage of positive results might have been obtained had the original animals been observed for a period longer than ninety days. Some time limit had to be set, however, and this period was chosen as likely to be sufficient, for by far the majority of positive inoculations recorded in the literature have occurred within this period.

The five strains recovered from these spinal fluids have already been successfully propagated through several series of rabbits by testicular inoculation. They have not as yet exhibited any peculiar characteristics which would make possible their identification from other strains or from one another, although the study of these strains has not progressed sufficiently far to permit any definite conclusions on this point. It may be stated, however, that they do not appear to be as virulent as the Nichols strain.

At least four out of five have given evidence of their ability to disseminate and localize in distant lymph nodes, from which they have been recovered as late as 130 days after inoculation. They have not as yet shown any ability to produce secondary skin or bone lesions, but secondary eye lesions (keratitis) have occurred in rabbits inoculated with two of the strains. The important clinical data in connection with the patients whose spinal fluids yielded positive inoculation results are presented in Table 2.

TABLE 2.—*Clinical Data of Cases with Positive Spinal Fluid Inoculation*

| No. | Sex* | Age | Race | Duration of Secondary Syphilis | Duration of Secondary Lesions | Blood Wassermann Reaction | Spinal Fluid | | | | Character of Skin and Mucous Membrane Lesions |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Cells | Globulin | Wassermann Reaction | Mastic Test | |
| 1 | ♀ | 16 | White | Unknown | 2 months | + | 6 | 0 | 0 | 00000 | Moderately profuse maculopapular syphilid; condylomas |
| 21 | ♀ | 23 | Colored | Unknown | 4 weeks | + | 4 | 0 | 0 | 00000 | No generalized rash; three moist papules on external genitalia |
| 3 | ♂ | 19 | Colored | 2 months | 3 weeks | + | 1 | 0 | 0 | 00000 | Profuse folliculopapular syphilid; mucous patches |
| 4 | ♀ | 17 | Colored | Unknown | 4 weeks | + | 2 | 0 | 0 | 00000 | Annular papular syphilid on face; mucous patches |
| 5 | ♀ | 20 | White | Unknown | 3 weeks | + | 3 | 0 | 0 | 00000 | Fairly profuse maculopapular syphilid; mucous patches |

* In this column, ♂ indicates male; ♀, female.
† This patient was four months pregnant at the time of puncture.

Four of the five patients were females, and the duration of the infection is unknown. In two patients, the secondary skin or mucous membrane lesions were few; in the others there was a generalized rash. Alopecia was not observed in any of the five positive cases. No observable relation was noted between the occurrence of positive inoculations and any particular type of secondary manifestations.

## COMMENT

The clinical characteristics of the orchitis produced in rabbits by each one of the strains of *Spirochaeta pallida* recovered by us from the spinal fluids of patients with early syphilis was such as to lead us to believe that we could safely eliminate the question of accidental infection of the rabbits with *T. cuniculi*. The latter organism does not produce an indurated lesion in the testis such as our strains produced. Furthermore, it has been our practice to examine all animals for the presence or absence of infection with this organism at the time of admission to the laboratory, and, if there is any sign to suggest such infection, the animal is at once discarded. As a matter of fact, we have encountered it thus far in only three or four instances out of more than 500 rabbits, and we are inclined to believe that its occurrence in stock animals is less common in this country than in Europe. The evidence of dissemination produced by four of these strains and the production of keratitis by two of them also supports the view that these organisms were in reality representatives of *Spirochaeta pallida*.

8. Pearce, Louise; and Brown, W. H.: J. Exper. Med. 35:39, 1922.

No claim is made that the rabbit inoculation method, as it was practiced in this series of experiments, gives absolute data as to the incidence of viable spirochetes in the spinal fluid. In fact, any percentage of positive results obtained by the use of this method probably falls short of the actual number of cases in which the organism is present. There is, however, rather close agreement between our figures and those of other investigators. If one takes into consideration only those cases reported by other observers, which are strictly comparable, that is to say, cases of secondary syphilis in which the spinal fluid is normal according to all the usual tests, and arranges the results in tabular form, this general agreement between the results of the various workers in this field becomes apparent (Table 3).

TABLE 3.—*Incidence of Spirochaeta Pallida in Normal Spinal Fluid in Early Syphilis* *

| Author | Number of Cases | Positive Results | Percentage of Positive Results | Method |
|---|---|---|---|---|
| Steiner | 20 | 3 | 15 | Rabbit inoculation |
| Arzt and Kerl | 11 | 2 | 18.8 | Rabbit inoculation |
| Fruhwald and Zalozieckl | 10 | 2 | 20 | Rabbit inoculation |
| Warthin and Wile | 15 | 4 | 26.6 | Stained sections of artificially prepared clot |
| Chesney and Kemp | 34 | 5 | 14.7 | Rabbit inoculation |

* By normal spinal fluid is meant a fluid that is normal as regards cell count, globulin content, Wassermann reaction and colloidal mastic test.

A study of Table 3 reveals close agreement between the results of four independent groups of investigators who used the rabbit inoculation method. The method of staining and sectioning an artificially prepared clot of the spinal fluid yielded a higher percentage of positive results in the hands of persons skilled in the use of this method, indicating that, in such hands, the latter method is more sensitive. It must be recognized, of course, that this comparison of the two methods is indirect, and also that the histologic method alone does not give any information as to the viability of the organisms found.

The occurrence of *Spirochaeta pallida* in the spinal fluid of patients with early syphilis in from 14.7 to 26.6 per cent. of the cases, when the spinal fluid is otherwise apparently normal, is rather striking. It indicates, as Wile and Kirchner [7] have pointed out, that one is not justified in concluding that a normal spinal fluid in such cases is free from virulent spirochetes. Moreover, it may indicate that minor deviations from the normal in the routine tests are of more significance than has heretofore been generally thought to be the case.

### CONCLUSION

1. Virulent strains of *Spirochaeta pallida* have been recovered by rabbit inoculation from the spinal fluids of patients with early syphilis in approximately 15 per cent. of the cases, when the fluids themselves were normal according to the routine laboratory tests.

2. This is in substantial agreement with the results of other workers who have used the same method.

**Curiosity and Research.**—The research spirit depends to a large degree on the persistence of curiosity as a mental trait. While society encourages scientific progress for utilitarian purposes, the strongest motive for research in the individual is the desire to know. An unquenchable thirst for the truth is the chief stimulus of scientific investigation.—Jackson, C. M.: *Science* 60:230 (Sept. 12) 1924.

## REINFECTION IN SYPHILIS

### REPORT OF THIRTEEN CASES *

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The interpretation to be placed on the numerous instances of reinfection in syphilis that have been recorded in the literature since the introduction of modern spirocheticidal therapy becomes of great practical importance to all syphilologists.

The fact that so few cases of reinfection had been recorded during the centuries through which the disease has been recognized and treated made many of the older syphilographers doubt its occurrence. Interest, therefore, in this subject, prior to the introduction of modern laboratory methods of diagnosis and to the advent of the arsphenamins in treatment, was largely theoretical.

Lipschutz,[1] in 1917, was able to compile 357 cases of reinfection recorded in the literature, the majority of which, however, were reported before our modern methods of therapy, and many of them are quite questionable because of essential points lacking in the case narratives.

Among those who have reported cases recently are White,[2] Lesser,[3] Thibierge,[4] Schweitzer,[5] Parounagian,[6] Nelson,[7] Brenn,[8] Williams,[9] Bechet,[10] Klauder,[11] Schamberg,[12] Boas [13] and others. The report of White,[2] in England, is one of the largest. He reports twenty-eight cases, in all of which he saw the patients in both attacks. These cases were seen at a British base hospital during the World War, and comprise a study of 10,500 syphilitic patients.

That reinfection is an established fact has been accepted by practically all syphilologists. The interpretation, however, that is to be placed on the appearance of manifestations of the disease, which give every evidence of being due to a new infection, is somewhat complicated, and has given rise to considerable controversy.

One group has taken the stand that, since immunity exists only so long as the individual has the disease, proved cases of reinfection furnish satisfactory evidence of a cure in the first attack.

Others, however, believe that it has never been proved that immunity actually exists throughout the course of the disease, and that the so-called cases of reinfection may in reality be only instances of superinfection.

If it could be demonstrated that superinfection is a possibility under conditions such as have existed in cases of so-called reinfection, the latter view would appear to be the logical interpretation.

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* Read before the Section on Dermatology and Syphilology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Lipschutz, F.: Arch. f. Dermat. u. Syph., 1917, p. 109.
2. White, C. F.: Brit. M. J. 2:509 (Oct. 20) 1917.
3. Lesser, F.: Deutsch. med. Wchnschr. 47:1425, 1921.
4. Thibierge: Bull. méd. Paris 34:953, 1920.
5. Schweitzer, S. E.: Reinfection in Syphilis, J. A. M. A. 68:1196 (April 15) 1916.
6. Parounagian, M. B.: New York M. J. 108:153 (Jan. 22) 1916.
7. Nelson, A. W.: Ohio State M. J. 15:726 (Nov.) 1919.
8. Brenn, C. E.: Mil. Surgeon 51:250 (Sept.) 1922.
9. Williams, C. M.: Syphilitic Reinfection, Arch. Dermat. & Syph. 1:702 (June) 1920.
10. Bechet: J. Cutan. Dis. 4:230, 1919.
11. Klauder, J. V.: M. Rec. 98:477, 1918.
12. Schamberg, J. F.: Second Attack of Syphilis Two Years After First, J. A. M. A. 72:826 (Sept. 13) 1919.
13. Boas, H.: Hospitalstidende 66:153 (Feb. 21) 1923.

Brown and Pearce,[14] working on this problem, were able to produce instances of superinfection in rabbits when they were reinoculated while still in the primary stage, untreated, or in the same stage of the disease following a single subcurative dose of arsphenamin or neo-arsphenamin.

In untreated rabbits in which the disease was well established, as evidenced by metastatic lesions, and in similar cases in which the animals had received intensive treatment with the arsphenamins, superinfection could not be produced.

It would appear from this work, and also from the meager reports in the literature on superinfection in the human being, that all such cases can be explained on the basis of a second infection superimposed on an existing one, possible only at an early stage in the disease or following a small amount of treatment, and presupposing, in both instances, insufficient time for the production of immune bodies.

As in all parasitic diseases, so also in syphilis, we have strong evidence to believe that immunity is short lived; and while as yet we do not have incontestable proof that reinfection presupposes a cure, still the evidence to date is strongly suggestive that such is the case. In their work on experimental syphilis in animals, reinfection has been accepted as proof of cure in the first attack by Neisser,[15] Kuznitsky,[16] Kolle,[17] Frei [18] and others.

As to whether, then, proved cases of reinfection can be accepted unconditionally as a criterion of cure or simply a question of immunity will, unfortunately, have to be determined by future revelations. In the light, however, of clear thinking and unbiased judgment, we can safely say that these cases are probably cured, and constantly increasing reports of reinfection are evidence of the fact that great progress has been made in the treatment of a disease that has presented the greatest medical problem with which the world has had to deal.

## DIAGNOSIS OF REINFECTION

Arbitrary conditions necessary for a diagnosis of reinfection have been set down by various authorities.

Before the days of laboratory methods in diagnosis, the requirements were based entirely on the history and clinical data. The accuracy of reports at this time were subject to much just criticism, since the correctness of the diagnosis would depend chiefly on the accuracy of the observations and the experience of the physician.

We agree with White [2] that in certain cases, by the use of the Wassermann reaction and the dark field illuminator, which make the serologic and parasitologic findings in syphilis absolute, it is now possible to furnish proof of reinfection aside from supporting clinical evidence.

We would submit, then, the following conditions as being necessary for a diagnosis of syphilitic reinfection:

1. In the first attack, *Spirochaeta pallida* must have been found from the syphilitic lesion, that is, chancre, condyloma, mucous patch, lymph node puncture or rash, or from a positive Wassermann reaction on the blood.

2. In the second attack, *Spirochaeta pallida* must be demonstrated from the new chancre, which appeared at a different site from the first chancre; the blood at the same time giving a negative Wassermann reaction. This implies that the patient must have been seen shortly after the appearance of the second chancre, and before the Wassermann reaction on the blood has had time to become positive.

The problem, then, is as follows: If a patient known to have had syphilis and who has had antisyphilitic treatment develops a new lesion that has the appearance of a chancre, these most probable conditions may have to be considered: (1) reinfection; (2) superinfection; (3) auto-inoculation; (4) mucous patch; (5) chancre redux; (6) gumma, and (7) chancroid.

In reinfection, it would be possible to demonstrate *Spirochaeta pallida*, while at the same time the Wassermann reaction on the blood would be negative. In superinfection, *Spirochaeta pallida* would be found locally, but at the same time the Wassermann reaction would be positive and the lesion would have occurred early in the course of the initial infection. Auto-inoculation takes place during the very earliest primary stage of the initial infection, constituting essentially a case of multiple chancres. A mucous patch may sometimes simulate a primary lesion, producing the so-called pseudochancre. Here *Spirochaeta pallida* is demonstrated by dark field examination, and the Wassermann reaction is positive. Chancre redux occurs at or near the site of the original chancre, the dark field examination is usually negative, and the Wassermann reaction is positive. A gumma would give a negative dark field examination, and the Wassermann reaction would most likely be positive. Chancroidal lesions sometimes resemble chancres. Here the dark field examination would be negative. A positive Wassermann reaction in such a case would indicate an uncured former syphilis.

It is seen, therefore, that in differential diagnosis, if the dark field examination is positive and the Wassermann reaction is negative, all possibilities excepting reinfection are at once eliminated.

## REPORT OF CASES

This report of thirteen cases has been compiled during the last five years from the records of syphilitic cases treated at Lakeside Hospital, Cleveland City Hospital and in the private practive of myself and my associate, Dr. H. N. Cole, representing a study of approximately 5,000 cases.

In Series 1, comprising ten cases, all the conditions outlined above have been fulfilled. In Series 2 are included three cases of probable reinfection in which one of the stringent requirements of Series 1 is lacking in the case narratives. We feel that many syphilographers have seen such cases in which they have been confident that reinfection has occurred, although the conditions outlined above have not all been fulfilled.

### SERIES 1

CASE 1.—*First Infection.*—J. D., aged 17, seen, April 10, 1918, at the Lakeside Hospital outpatient clinic, had a single indurated papulo-erosive ulcer at the meatus of one week's duration, which had developed about two weeks after exposure. The inguinal glands were definitely enlarged and painless. There was no other visible evidence of syphilis. The dark field examination was positive for *Spirochaeta pallida*, and the Wassermann reaction was negative. The patient received six intravenous injections of 0.4 gm. each of arsphenamin at weekly intervals. The first two weeks he had twelve mercury inunctions followed by six weekly intramuscular injections of mercuric salicylate, 0.1 gm. each. After a rest of five weeks,

14. Brown, W. H., and Pearce, Louise: J. Exper. Med. **33**: 553 (May) 1921.
15. Neisser, A.: Beitrage zur Pathologie und Therapie der Syphilis, Berlin, 1911, p. 182.
16. Kuznitsky, E., cited by Neisser, A.: Beitrage zur Pathologie und Therapie der Syphilis, 1911, p. 295.
17. Kolle, W.: Deutsch. med. Wchnschr. **48**: 1301 (Sept. 20) 1922.
18. Frei, W.: Arch. f. Dermat. u. Syph., 1923, p. 144.

he received a total of twenty additional mercury injections irregularly over a period of about ten months. The Wassermann reaction was negative at the end of treatment.

Summary: The period of infection was three weeks; the character of the disease, primary, of the meatus. The treatment consisted of six arsphenamin injections and twenty-six mercury injections. The duration of the treatment was ten months.

*Second Infection.*—The patient returned, Feb. 2, 1923, complaining of a sore of two weeks' duration, which followed three and one-half weeks after exposure. Examination showed an indurated, characteristic chancre in the coronal sulcus. The scar of the previous primary lesion was present at the meatus. The inguinal lymph glands were enlarged and painless. There was no other evidence of syphilis on inspection of the skin and mucous membranes. The dark field examination was positive for *Spirochaeta pallida*, and the Wassermann reaction on the blood was negative. The lesion disappeared after treatment was begun.

The diagnosis was primary syphilis and reinfection.

Case 2.—*First Infection.*—J. C., aged 27, presented himself, May 8, 1920, at the Lakeside clinic complaining of a sore on the penis of eight days' duration. He gave a history of exposure twenty-five days prior to the appearance of the sore. There was an indurated ulcer on the ventral surface of the foreskin about the size of a dime. The inguinal glands were markedly enlarged and painless. Examination of the skin and mucous membranes was negative. Dark field examination of serum from the sore was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. He was hospitalized at Cleveland City Hospital for ten days, during which time he received four intravenous injections of arsphenamin in the following dosage: 0.3 gm.; two days later, 0.4 gm.; two days later, 0.4 gm., and five days later, 0.4 gm. During the same period, he received two intramuscular injections of red mercuric iodid, one-fourth grain (0.01 gm.) each, and two mercury inunctions. His treatment was continued at the Lakeside clinic, with weekly injections of arsphenamin or neo-arsphenamin and intramuscular injections of mercuric salicylate. He received six arsphenamin injections of 0.4 gm. each and nine injections of neo-arsphenamin, 0.9 gm. each, together with twenty-one intramuscular injections of mercuric salicylate, 0.1 gm. each. The entire treatment extended over a period of seventeen months. The Wassermann reactions during this and at the end of treatment were negative.

Summary: The period of infection was four and one-half weeks. The character of the disease, primary, of the foreskin. The treatment was arsphenamin, ten injections, neo-arsphenamin, nine injections; the mercury given consisted of twenty-one mercuric salicylate injections, two red mercuric iodid injections and two inunctions. The duration of the treatment was seventeen months.

*Second Infection.*—The patient returned to the clinic, Feb. 15, 1922, three months after the previous treatment, complaining of a sore of ten days' duration, which developed two weeks after an exposure. There was a typical, cartilaginous lesion on the dorsum of the reflected foreskin about 1.5 cm. in diameter. The scar of the former primary lesion was present on the ventral surface of the foreskin. The inguinal glands were enlarged. Examination of the skin and mucous membranes was negative. A dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. The lesion disappeared under antisyphilitic treatment.

The diagnosis was primary syphilis and reinfection.

Case 3.—*First Infection.*—A. S., aged 22, presented himself at the Lakeside Hospital outpatient clinic, Oct. 2, 1919, complaining of a sore of about ten days' duration. Examination revealed a characteristic, indurated ulcer on the foreskin about 1 cm. in diameter. There was considerable edema of the surrounding tissues. He gave a history of exposure ten days prior to the appearance of the sore. A dark field examination was positive for *Spirochaeta pallida*, and the Wassermann reaction on the blood was negative. The skin and mucous membranes were negative to inspection. The lesion disappeared promptly after treatment was started.

The treatment consisted of six weekly injections intravenously of arsphenamin, 0.5 gm. each, together with weekly intramuscular injections of mercuric salicylate, 0.1 gm. each, continued over a period of twelve weeks. After a rest period of four weeks, the same course of treatment was repeated. The last course of treatment was somewhat irregular, extending over a period of eight months.

Summary: The period of infection was three weeks. The character of the disease, primary of the foreskin. The treatment was arsphenamin, twelve injections, and mercuric salicylate, twenty-four injections. The duration of the treatment was twelve months.

*Second Infection.*—The patient returned to the clinic, Jan. 16, 1922, fifteen months after his former treatment, complaining of a sore of five days' duration following an exposure about eighteen days previously. There was a typical, indurated chancre, about 1 cm. in diameter, in the coronal sulcus. The scar of the former chancre was present on the foreskin. *Spirochaeta pallida* was easily demonstrated by the dark field examination, and the Wassermann reaction on the blood was negative. The lesion disappeared under mixed treatment with arsphenamin and mercury.

The diagnosis was primary syphilis and reinfection.

Case 4.—*First Infection.*—H. C., aged 25 was an outpatient at the Lakeside Hospital clinic. He was admitted, Jan. 17, 1921, complaining of a sore of ten days' duration. He gave a history of exposure five weeks previously. Examination revealed a large ulcer, cartilaginous in character, on the reflected foreskin. The inguinal glands were enlarged and painless. The skin and mucous membranes were negative. Dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. The lesion disappeared under antisyphilitic treatment.

Treatment in this case consisted of neo-arsphenamin intravenously, 0.75 gm., followed two days later by 0.9 gm. and two days later by 0.9 gm., followed by weekly injections of 0.9 gm. for six additional doses. At the same time, he received weekly intramuscular injections of mercuric salicylate (cream), 0.1 gm. each for a total of twenty doses. Ten days after the last neo-arsphenamin treatment, he developed a dermatitis exfoliativa. A rest period of two months followed the first ten mercury injections. The Wassermann reaction on the blood and the cerebrospinal fluid was negative in January, 1922.

Summary: The period of infection was five weeks. The character of the disease, primary, of the foreskin. The treatment consisted of nine neo-arsphenamin injections and twenty mercuric salicylate injections. The duration of treatment was twelve months.

*Second Infection.*—The patient returned to the outpatient clinic of Lakeside Hospital, April 16, 1923, complaining of a sore on the penis of five days' duration, which followed an exposure three weeks previously. Examination revealed an ulcer in the coronal sulcus region of the frenum with characteristic appearance and induration. The examination was otherwise negative, except for the scar of the former chancre. Dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. The lesion disappeared under antisyphilitic treatment.

The diagnosis was primary syphilis and reinfection.

Case 5.—*First Infection.*—J. S., aged 27, seen by Dr. Charles P. Emerson, in Indianapolis in October, 1918, presented a lesion in the coronal sulcus which had appeared two weeks after exposure. A dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. He received fifteen intravenous injections of arsphenamin and twenty intramuscular injections of mercury. The treatments were given at weekly intervals, and extended over a period of about one year. The patient said that he had had several negative Wassermann reactions following the treatment.

Summary: The period of infection was four weeks. The character of the disease, primary, of the coronal sulcus. The treatment consisted of arsphenamin, fifteen injections, and mercury, twenty injections. The duration of the treatment was twelve months.

*Second Infection.*—In November, 1921, about two years after the treatment for the first infection, the patient presented himself at the outpatient department of Lakeside Hospital, complaining of a sore on the foreskin of three days' duration. The exposure was five weeks previous. On examination there was a small, split-pea sized, indurated ulcer on the dorsum of the foreskin. The scar of the former primary lesion was present in the coronal sulcus. A dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. Examination of the skin and mucous membranes was negative.

The diagnosis was primary syphilis and reinfection.

CASE 6.—*First Infection.*—T. F., aged 21, was admitted to the outpatient department of Lakeside Hospital, July 6, 1920, complaining of a sore on the penis of seven days' duration. He said that he had had promiscuous exposures about once a week prior to the present trouble. Examination revealed a papulo-erosive, indurated lesion on the glans penis, about 1.5 cm. in diameter. The inguinal glands were moderately enlarged and painless. The skin and mucous membranes were clear. A dark field examination of the serum from the lesion was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative.

The treatment consisted of three intravenous injections of arsphenamin, 0.4 gm. each, given two days apart, followed by three more given at weekly intervals. This was followed by twenty-four daily inunctions with mercurial ointment. The patient was lost track of at this point, but returned nine months later, May 19, 1921, at which time an examination was negative and the Wassermann reaction on the blood was negative. He then received three weekly injections of neo-arsphenamin, 0.9 gm. each, and fifteen intramuscular injections of mercuric salicylate, 0.1 gm. each. His last treatment was on Feb. 15, 1922.

Summary: The period of infection was three weeks. The character of the disease, primary, of the glans. The treatment consisted of arsphenamin, six injections; neo-arsphenamin, three injections; mercury, twenty-four inunctions, and fifteen mercuric salicylate injections.

*Second Infection.*—Oct. 27, 1922, the patient again presented himself at the Lakeside Hospital clinic, complaining of a sore on the penis of three weeks' duration. Exposures had been frequent prior to the appearance of the sore. Examination showed an ulcer on the foreskin, about 2 cm. in diameter. The lesion was covered by a crust and was only slightly indurated (veneer type). The inguinal glands were enlarged and painless. The scar of the former chancre was present on the glans. The skin and mucous membranes were negative to inspection. The dark field examination of the serum from the lesion was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. The lesion disappeared promptly under treatment with arsphenamin and mercury.

The diagnosis was primary syphilis and reinfection.

CASE 7.—*First Infection.*—T. M., aged 23, presented himself at the outpatient clinic at Lakeside Hospital, May 22, 1922, complaining of headache, sore throat, general malaise and an eruption over his body. Examination revealed a generalized maculopapular syphiloderm with mucous patches in the mouth and general adenopathy. There was a healed indurated lesion on the foreskin of three months' duration. The Wassermann reaction on the blood was strongly positive. He was given six intravenous injections of neo-arsphenamin, 0.75 gm. each, at weekly intervals, and eight intramuscular injections of mercuric salicylate, 0.1 gm. each. After a rest of four weeks, the course was repeated. July 17, 1922, the Wassermann reaction was two plus. Nov. 16, 1923, the Wassermann reaction was negative.

Summary: The period of infection was twelve weeks. The character of the disease, primary, of the foreskin; secondary eruption. The treatment consisted of neo-arsphenamin, twelve injections, and mercury, forty-one injections. The duration of the treatment was sixteen months.

*Second Infection.*—The patient was readmitted, Dec. 21, 1923. He presented a small ulcer, about 0.5 cm. in diameter, on the frenum with only slight induration. The sore was of two days' duration, and followed an exposure two weeks before. The skin and mucous membranes were negative except for the scar of the former chancre. A dark field examination revealed many spirochetes. The Wassermann reaction on the blood was negative. The lesion quickly disappeared under treatment.

The diagnosis was primary syphilis and reinfection.

CASE 8.—*First Infection.*—A. D., aged 41, seen by us at the Lakeside clinic, April 7, 1920, said that in February, 1918, he had a sore on the shaft of the penis which was followed, a few weeks later, by a generalized eruption on his body. The Wassermann reaction was strongly positive.

The treatment given at the outpatient clinic of Cook County Hospital, Chicago, consisted of weekly intravenous injections of arsphenamin and intramuscular injections of mercury. Over a period of twenty months, he received a total of ten arsphenamin injections and approximately fifty mercury injections. The Wassermann reaction had become negative a few months after the treatment was started, and had remained negative at the time he stopped treatment.

Summary: The period of infection was twelve weeks. The character of the disease, primary, of the shaft of the penis; secondary eruption. The treatment consisted of arsphenamin, ten injections, and mercury, fifty injections, over a period of twenty months.

*Second Infection.*—The patient presented a lesion on the glans penis of ten days' duration, which appeared about two and one-half weeks after exposure. The lesion was papulo-ulcerative in character. The inguinal glands were enlarged and painless. The scar of the former chancre was present on the shaft of the penis. There was no other visible evidence of syphilis. A dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. The lesion disappeared under antisyphilitic treatment.

The diagnosis was primary syphilis and reinfection.

CASE 9.—*First Infection.*—H. N., aged 24, consulted us in March, 1913, at which time he presented a typical generalized maculopapular eruption of two weeks' duration and a healing, indurated primary lesion on the glans penis. The Wassermann reaction on the blood was strongly positive. The patient complained of loss of weight and general malaise. All lesions disappeared promptly after antisyphilitic therapy had been started.

The treatment in this case, extending over a period of four years, consisted of arsphenamin, eleven doses intravenously, a total of 5.1 gm., and mercurial oil, seventy intramuscular injections of 0.25 c.c. each. Treatments were given at approximately weekly intervals, with vacation periods of from four to ten weeks between courses. The Wassermann reaction, Nov. 1, 1913, was two plus positive. The treatment ended in June, 1917.

Summary: The period of infection was ten weeks. The character of the disease, primary, of the glans; secondary eruption. The treatment consisted of arsphenamin, eleven injections; neo-arsphenamin, thirteen injections, and mercurial oil, seventy injections, over a period of four years.

*Second Infection.*—The patient returned, April 2, 1921, four years following his previous treatment and eight years after his first infection. He presented an indurated ulcer on the foreskin of one week's duration, which appeared four weeks after exposure. The lesion was characteristic in appearance, and there was painless enlargement of the inguinal glands. A dark field examination was positive for *Spirochaeta pallida*. The Wassermann reaction on the blood was negative. The skin and mucous membranes were negative to examination. The lesion disappeared promptly after antisyphilitic treatment had been started.

The diagnosis was primary syphilis and reinfection.

CASE 10.—*First Infection.*—M. F. presented himself at the Lakeside Hospital outpatient clinic, Aug. 10, 1914, giving a history of a chancre seven years previously, followed by a generalized eruption on the body. He had been treated over a period of eighteen months with mercury pills by mouth. He had had no treatment for more than five years prior to his admission to the clinic. Except for the scar of the former

primary lesion on the glans penis, the physical examination was negative for syphilis. The Wassermann reaction on the blood was strongly positive.

The treatment in the case extended over a period of six and one-half years, during which time he received thirteen intravenous injections of arsphenamin and seven intravenous injections of neo-arsphenamin. He received twelve intramuscular injections of mercurial oil, 0.25 c.c. each, and seventy-two inunctions of mercurial ointment. By mouth, he received 1.3 gm. of mercuric chlorid, in one-twelfth grain (0.005 gm.) doses, and potassium iodid, in 10 grain (0.65 gm.) doses, for about three years. The Wassermann reaction became negative, and remained so three years after the treatment was started.

Summary: The period of infection was seven years. The character of disease, tertiary, latent. The treatment consisted of arsphenamin, thirteen injections; neo-arsphenamin, seven injections; mercurial oil, twelve injections; mercury inunctions, seventy-two, and mercuric chlorid by mouth, 1.3 gm. The treatment extended over a period of six and one-half years.

*Second Infection.*—The patient returned, May 8, 1922, complaining of some sores on the penis of three days' duration, following an exposure about ten days before. Examination revealed three small, slightly indurated lesions in the coronal sulcus. A dark field examination of serum from the lesion revealed many spirochetes. The Wassermann reaction on the blood was negative. There was no other visible evidence of syphilis. The lesions disappeared a few days after the antisyphilitic treatment was started.

The diagnosis was primary syphilis and reinfection.

SERIES 2

Case 11.—*First Infection.*—A. C., aged 36, consulted us in April, 1913, complaining of an eruption on the body and sore throat of about two weeks' duration. He said that he had developed a sore on the penis about six weeks before. There was a large, healing, indurated chancre in the coronal sulcus. There was a generalized maculopapular eruption on the skin, with mucous patches in the mouth, and general enlargement of the lymph glands. The Wassermann reaction on the blood was strongly positive.

The diagnosis was secondary syphilis.

The treatment extended over a period of two years, during which time he received ten intravenous injections of arsphenamin, given at weekly intervals, and sixty intramuscular injections of mercurial oil of 0.25 c.c. each, given at weekly intervals in courses of ten injections each with rest periods of from four to six weeks. The Wassermann reaction was negative at the end of the treatment.

Summary: The period of infection was eight weeks. The character of the disease, primary, of the coronal sulcus; secondary eruption. The treatment consisted of arsphenamin, ten injections, and mercurial oil, sixty injections, over a period of two years.

*Second Infection.*—Nov. 27, 1922, nearly ten years after the first infection, the patient returned, complaining of headache, general malaise and an eruption on the body of about ten days' duration. He had had a sore on the penis eight weeks before, which he thought unimportant because it healed without treatment. There had been several exposures prior to the appearance of the sore. Examination revealed a healed lesion on the foreskin and a generalized maculopapular eruption, with mucous patches on the genitalia and general lymph node enlargement. The Wassermann reaction on the blood was strongly positive. The symptoms disappeared under antisyphilitic treatment.

The diagnosis was secondary syphilis and reinfection.

Case 12.—*First Infection.*—X., a physician, aged 33, in September, 1919, developed a lesion at the inner canthus of the left eye, which did not respond to several weeks of treatment for dacrocystitis. Clinically, the possibility of an extragenital primary syphilis was strongly suggestive. A dark field examination of serum from the lesion was positive for *Spirochaeta pallida.* The Wassermann reaction on the blood was three plus positive. There was no further evidence of syphilis on the skin or mucous membranes.

The following treatment was extended over a period of about fifteen months: Sixteen intravenous injections of arsphenamin, 0.5 gm. each, and twenty-nine intramuscular injections of mercuric salicylate, 0.1 gm. each, were given at weekly intervals. The patient also received seventy inunctions of mercurial ointment. The Wassermann reaction on the blood became negative four months after treatment was started, and remained so at the end of the treatment.

Summary: The period of infection was seven weeks. The character of the disease, extragenital primary syphilis of the face. The treatment consisted of arsphenamin, sixteen injections; mercury, twenty-nine mercuric salicylate injections and seventy mercury inunctions given over a period of fifteen months.

*Second Infection.*—July 21, 1921, the patient consulted us, complaining of a sore over the last joint of the left index finger of about six weeks' duration, which had refused to heal. There was an indolent, indurated granulomatous ulcer at the base of the left index finger, dorsal surface. The epitrochlear lymph node was greatly enlarged and painless. A dark field examination of serum from the lesion was positive for *Spirochaeta pallida.* The Wassermann reaction on the blood was strongly positive. There was no other evidence of syphilis on physical examination. The lesion healed promptly after antisyphilitic treatment was started.

The diagnosis was secondary syphilis and reinfection.

Case 13.—*First Infection.*—A. B., aged 30, in March, 1919, developed a sore on the foreskin of the penis, following an exposure three weeks before. He consulted Dr. Dembrow, at the U. S. Marine Hospital in Cleveland, after four weeks of "local treatment" had failed to heal the sore. Dark field examinations were negative. The Wassermann reaction on the blood resulted in a "doubtful reaction." Two weeks later, another Wassermann test was strongly positive. The patient said that he received treatment over a period of two years consisting of approximately twelve intravenous injections of neo-arsphenamin and thirty-five intramuscular injections of mercury. Several Wassermann reactions taken during his course of treatment and also following it were negative in each instance.

Summary: The period of infection was seven weeks. The character of the disease, primary, of the foreskin. The treatment was arsphenamin, twelve injections, and mercury, thirty-five injections, over a period of two years.

*Second Infection.*—Feb. 22, 1924, he was seen by us in consultation with Dr. C. E. Mulligan. He was complaining of a sore on the penis of six weeks' duration, which developed two weeks following exposure. While under the care of another physician, the Wassermann test taken about four weeks after the sore appeared was negative. There was a large, indurated granulomatous ulcer, about 2 cm. in diameter, at the meatus, with a profuse serous discharge. There was marked painless, bilateral enlargement of the inguinal lymph glands. Examination of the skin and mucous membranes was negative for other evidence of syphilis. Several spirochetes were demonstrated by a dark field examination of serum from the lesion. The Wassermann reaction on the blood was three plus positive. The lesion healed after antisyphilitic treatment was started.

The diagnosis was primary syphilis and reinfection.

## SUMMARY AND DEDUCTIONS

Study of this group of thirteen cases of reinfection seen among approximately 5,000 syphilitic patients draws to our attention the striking fact that our figures agree closely with those of White, who reported twenty-eight instances among 10,500 cases.

*Time After Infection the First Diagnosis Was Made.*—If one more closely analyzes this series, one finds that, outside of one old syphilitic patient who had been infected seven years before, all of this group of reinfections were patients diagnosed while still in the primary, or perhaps better still, the early stage of the disease. True, it is impossible to get exact dates in all

cases, yet they are approximately correct; and we find that the patients reported at the following number of weeks after the exposure: 3, 3, 3, 4, 4½, 5, 7, 7, 8, 10, 12, 12. This gives extremes of three and twelve weeks and a median of six and one-half weeks following infection. What does this mean? Why are there not more old syphilitic patients found in this list? Only one so-called latent syphilitic patient among thirteen cases of reinfection. Does this not indicate to us the great value of early diagnosis and the early institution of treatment in syphilis? Apparently, such cases are more curable—not only clinically and serologically, but also bacteriologically. If not, how can we explain their new infection?

*Treatment Employed.*—This brings up the interesting point as to the treatment that was employed in these cases.

Arsphenamin: I will employ this term broadly to mean either the old arsphenamin or neo-arsphenamin, as they were used almost equally, and many times a patient would receive some of each during his course of treatment. All thirteen patients received some arsphenamin, the number of doses varying as follows and being of about average size: 6, 9, 9, 10, 10, 12, 12, 15, 16, 19, 20, 24. This gives extremes of six and twenty-four, and a median of twelve injections employed to a patient.

Mercury: Patient 9 had received seventy injections of 40 per cent. mercurial oil, 0.25 c.c. each, and Patient 10, twelve injections of mercurial oil, seventy-two rubs and some mercuric chlorid tablets. This was our old syphilitic patient. Patient 11 received sixty injections of mercurial oil. We might add that we have since given up mercurial oil injections because of cumulative absorption and mercury intoxication.

The mercury generally employed in the treatment of our syphilitic cases was a well known salicylate cream, 20 per cent. strength, of which we gave from 1½ to 2 grains (0.09 to 0.13 gm.) at a dose, once a week. This was used in ten of our cases in the following number of injections: 15, 20, 20, 21, 24, 26, 29, 35, 41, 50, with extremes of 15 and 50 injections and a median of 25 injections. In other words, our average patient received treatment consisting of from six to twenty-four injections of arsphenamin, with a median of twelve injections, and from fifteen to fifty injections of mercuric salicylate, with a median of twenty-five injections, to cure him.

*Period of Treatment.*—The time the patients were under treatment, given in months, was: 10, 12, 12, 12, 12, 16, 17, 20, 24, 24, 24, 48 and 72—the last being our old syphilitic patient, who came in for treatment seven years after the infection and who will not be considered. These figures give extremes of from ten months to forty-eight months that the patients were under therapy, with a median of sixteen months. If, on considering these interesting figures, we remember that our cases were all early infections up to twelve weeks after exposure, with a median of six and one-half weeks, does this not give us some indications as to the length of good therapy required in such cases to render the patients bacteriologically well enough to contract a new syphilis?

*Period Between Infections.*—The last item of interest to assist in drawing conclusions from this series of reinfection with syphilis is the period between infections. The periods before a new invasion of the spirochete in months are 1, 3, 6, 8, 8, 12, 15, 24, 48 and 120, with extremes of one month and 120 months, or ten years, and a median of fifteen months. We believe that Case 7, in which only one month elapsed after the treatment of the first attack and the appearance of the second chancre, is a good example to show that there is no immunity, even for a short time, conferred on a patient by a previous attack of syphilis. As soon as the old disease is bacteriologically cured, he is once more open to a new invasion, if exposed.

## CONCLUSIONS

1. The thirteen cases of syphilitic reinfection reported satisfy quite closely the requirements laid down to constitute a true infection.

2. A diagnosis was made in twelve of these cases and treatment started at extremes of from three to twelve weeks, with a median of six and one-half weeks after exposure. Only one old syphilitic patient was treated. In his case, treatment was instituted seven years after infection.

3. These patients, on an average, received from six to twenty-four injections of arsphenamin, with a median of twelve injections, and from fifteen to fifty mercuric salicylate injections, with a median of twenty-five injections, in order to render them bacteriologically free from spirochetes and in a position to get a new syphilitic infection.

No hard and fast rule is laid down as to the amount of treatment necessary to cure a case of syphilis. Each case is one unto itself, but in this series of early diagnosed syphilitic cases, the foregoing treatment was apparently sufficient.

4. The period of time that intervened between the first and the second infection varied from one month to 120 months, with a median of fifteen months. I believe that this indicates that the first syphilitic infection confers no immunity on its host for any period afterward. As soon as he is free from the first infection, he is open to another one, if exposed.

5. From reports of others and from this series, I believe that the curability of syphilis is definitely possible, provided: (*a*) an early diagnosis can be made by the dark field, and (*b*) early, vigorous treatment can be instituted with arsphenamin and mercury injections.

6. With modern therapy, syphilitic reinfection is probably more frequent than we suspect, and if more patients with syphilis could be closely followed over a period of years, such would be found to be the case.

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**Theories of Cause of Tetany.**—We have three possible theories of the causation of idiopathic and parathyroid tetany. The symptoms may be regarded as the result of deficiency in the calcium content of the blood; as caused by an excess of a toxic substance, guanidin, which is capable of reducing the calcium content of the blood, or as the expression of a shift of the reaction of the blood toward the alkaline side. The last of the theories is especially attractive since, if proved, it would permit the inclusion of all types of tetany under one common head. The experimental findings are, however, against such a view, and it has been suggested that the reported value of acid medication in the disease is merely a result of the effect of such treatment in promoting calcium absorption. There is, on the other hand, a general agreement as to the presence of a fall in the serum calcium in these conditions. Symptoms develop with considerable constancy when the serum calcium has reached a figure of about 6 mg. per hundred cubic centimeters.—De Wesselow, O. L. V.: The Chemistry of the Blood in Clinical Medicine, 1924.

# THE CHEMOTHERAPY OF SULPHARSPHENAMIN

## I. TOXICITY AND TRYPANOCIDAL EFFICIENCY *

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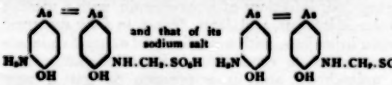
The first record of the substitution of an amino radical of arsphenamin by the methylene sulphonic acid group is to be found in the specification of German patent 249726, issued in July, 1912. The method given there consists in gently warming an aqueous suspension of 3,3'-diamino-4,4'-dihydroxyarsenobenzene (arsphenamin base) with formaldehyd solution and aqueous sodium bisulphite on a steam bath, and precipitating with hydrochloric acid. The final product was claimed to have the structural formula




with only one amino group substituted.

Nothing more was heard of this compound until 1919, when Levy-Bing, Lehnhoff-Wyld and Gerbay [1] published an account of their experimental and clinical work with sulfarsenol, an arsenical prepared by F. Lehnhoff-Wyld and identical in structure with the arsphenamin derivative described in the patent cited above. Later, however, in submitting the compound to the Council on Pharmacy and Chemistry of the American Medical Association for admission to the New and Nonofficial Remedies,[2] the manufacturers of sulfarsenol claimed that both amino radicals of arsphenamin are replaced by methylenesulfonic acid groups, and that its formula is therefore $NaOSO_2CH_2NHOHC_6H_2As{=}AsC_6H_2OHNHCH_2O_2SONa$.

About the same time, there appeared in the chemical literature a communication by Voegtlin and Johnson [3] containing the first detailed description of the preparation of the doubly substituted arsphenamin derivative, which the authors named sulpharsphenamin. The method of these authors differs from the German in that they begin with arsphenamin in a water-alcohol solution, work at ordinary temperature and precipitate the final product, the disodium salt, with alcohol—all in one continuous operation.

As to the toxicity of sulpharsphenamin, the earliest reports by Levy-Bing, Lehnhoff-Wyld and Gerbay [1] give 400 mg. per kilogram as the toxic dose for mice. Voegtlin, Johnson and Dyer [4] found the maximum tolerated dose for white rats by the intravenous route to be about two thirds of the minimum lethal dose (about 400 mg. per kilogram) or, approximately, 265 mg. per kilogram. But, according to our experiments (and we have tested almost every brand on the market), the most recent lots of sulpharsphenamin of whatever manfacture generally pass the standard toxicity tests at from 300 to 400 mg. per kilogram.

In evaluating a chemotherapeutic agent intended for the treatment of syphilis, the property second in importance to toxicity is its trypanocidal power. The assumption of the existence of a close relationship between the results obtained with *Trypanosoma equiperdum* in experimental animals and those observed clinically with *Spirochaeta pallida* has been confirmed by Schamberg, Kolmer and Raiziss,[5] and more recently by Voegtlin and Miller,[6] who state that "every arsenical which was shown to be efficient in the treatment of rabbit and human syphilis was also shown to possess a high efficiency by means of the trypanocidal tests, and vice versa."

TABLE 1.—*Trypanocidal Effect of Arsphenamin, Neo-Arsphenamin and Sulpharsphenamin*

| Experiment Series | Compound | Dose, Mg. per Kg. | Route | Examination for Trypanosomes, Days After Injection 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Arsphenamin | 2 | Iv* | +1 | +2 | D | | | | |
| | A | 4 | Iv | Trace | +1 | +4 | D | | | |
| | | 6 | Iv | — | — | — | — | — | — | — |
| | Neo-arsphenamin | 2 | Iv | Trace | Few | +4 | D | | | |
| | B | 4 | Iv | Trace | Few | +4 | D | | | |
| | | 6 | Iv | — | — | — | — | — | — | — |
| | Sulpharsphenamin | 14 | Im | +2 | +2 | +4 | D | | | |
| | C | 18 | Im | — | — | — | — | — | — | — |
| | | 22 | Im | — | — | — | — | — | — | — |
| 2 | Arsphenamin | 2 | Iv | Few | +1 | +2 | +4 | D | | |
| | D | 4 | Iv | — | — | — | — | — | — | — |
| | | 6 | Iv | — | — | — | — | — | — | — |
| | Neo-arsphenamin | 2 | Iv | — | +1 | +2 | +4 | D | | |
| | E | 4 | Iv | — | — | — | — | — | — | — |
| | | 6 | Iv | — | — | — | — | — | — | — |
| | Sulpharsphenamin | 14 | Iv | +1 | +2 | +4 | D | | | |
| | F | 18 | Iv | — | — | — | — | — | — | — |
| | | 11 | Im | +4 | D | | | | | |
| | | 18 | Im | — | — | — | — | — | — | — |
| | Sulpharsphenamin | 14 | Iv | Few | Trace | +1 | +1 | — | — | +1 |
| | G | 18 | Iv | — | — | — | — | — | — | — |
| | | 14 | Im | Trace | — | — | — | — | — | — |
| | | 18 | Im | Trace | — | — | — | — | — | — |
| | Sulpharsphenamin | 14 | Iv | +1 | Few | Trace | — | — | — | +1 |
| | H | 18 | Iv | Few | Trace | — | — | — | — | — |
| | | 11 | Im | — | — | — | — | — | — | — |
| | | 18 | Im | — | — | — | — | — | — | — |
| 3 | Arsphenamin | 2 | Iv | — | — | Trace | — | — | — | — |
| | I | 4 | Iv | — | — | — | — | — | — | — |
| | Neo-arsphenamin | 4 | Iv | — | Trace | Few | — | — | — | +1 |
| | J | 3 | Iv | — | — | — | — | — | — | +1 |
| | Sulpharsphenamin | 14 | Iv | Trace | — | — | — | — | — | — |
| | K | 18 | Iv | — | — | — | — | — | — | — |
| 4 | Arsphenamin | 2 | Iv | Trace | +1 | +4 | D | | | |
| | L | 4 | Iv | — | — | — | — | — | — | — |
| | Neo-arsphenamin | 2 | Iv | +2 | +4 | D | | | | |
| | M | 4 | Iv | — | — | — | — | — | — | — |
| | | 6 | Iv | — | — | — | — | — | — | — |
| | Sulpharsphenamin | 14 | Iv | +2 | +2 | +4 | D | | | |
| | N | 18 | Iv | Trace | — | — | — | — | — | — |

* Iv, intravenous; Im, intramuscular; D, died.

Up to the present, the work of Voegtlin, Johnson and Dyer [4] has been the only one we know of in which results of the trypanocidal properties of sulpharsphenamin have been reported.[7] In that paper, the authors give the results obtained with eighteen different lots of the arsenical prepared by them, the average minimum effective dose being about 22.8 mg. per kilogram by the intravenous route, and 25.3 mg. when administered subcutaneously.

Now, in performing trypanocidal tests, it is almost impossible for various investigators to obtain the same results. This is due to a number of causes, such as

* From the Dermatological Research Laboratories.
* Read before the Section on Dermatology and Syphilology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Levy-Bing, Lehnhoff-Wyld and Gerbay: Ann. d. Mal. Vener. 14: 520, 1919.
2. Sulfarsenol, J. A. M. A. 79: 1767 (Nov. 18) 1922.
3. Voegtlin, C., and Johnson, J. M.: J. Am. Chem. Soc. 44: 2573, 1922.
4. Voegtlin, C.; Johnson, J. M., and Dyer, H.: Pub. Health Rep. 37: 2783 (Nov. 10) 1922.
5. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: Am. J. M. Sc. 160: 23 (July) 1920.
6. Voegtlin, C., and Miller, D. W.: Pub. Health Rep. 37: 1627 (July 7) 1922.
7. After the completion of this work, the attention of the author was called to an article by C. N. Myers and H. B. Corbitt, in the Journal of the American Pharmaceutical Association, December, 1923, with reference to the trypanocidal effect of sulpharsphenamin. Results that fully confirm the findings here recorded were obtained.

the biologic differences in the animals employed; changes in the strain of parasites, due to numerous passages from one animal to another which may modify its virulence and susceptibility to the chemical, and, finally, the personal equation, which may result in small but noticeable variations in technic. This is especially true with regard to the method of infecting animals with known numbers of trypanosomes.

That the foregoing statement is true will be proved by Table 2, in which two sets of tests have been carried out under the same conditions, with the same materials and by the same investigators, but two weeks apart. Despite all the precautions, the results obtained were not always the same, and, in some cases, a considerable number of variations were observed.

It therefore seemed to us that the best way to find the trypanocidal value of sulpharsphenamin would be to compare it with some standard trypanocidal agents, such as arsphenamin and neo-arsphenamin, whose therapeutic power is known. Reasoning along the same lines, we also thought that our results would be still more valuable if the comparative trypanocidal tests were carried out simultaneously and by the same persons under the same conditions.

a trace or negative was considered as the minimum effective dose. Voegtlin and Miller suggested that the blood be again examined at the end of forty-eight and seventy-two hours after injection, but, for greater accuracy, we extended our observation to seven days.

In Table 1, we give the results of four series of trypanocidal tests picked at random.

The data in Table 1, as well as those given in Table 2, are very illuminating. Taking the readings seventy-two hours after injection, the minimum effective dose remained remarkably constant for each of the three organic arsenicals throughout the six series of experiments. With the exception of Series 1, in which 6 mg. was required, 4 mg. per kilogram of arsphenamin was generally sufficient to keep the animals free of parasites throughout the period of observation, seven days, and in one case, in Series 3, even 2 mg. proved sufficient. Equally consistent results were obtained with neo-arsphenamin: 6 mg. always proved efficacious, while out of the eight injections of 4 mg. per kilogram, those in Series 2 and 4 kept the animal sterile throughout the period of observation, while those in Series 3 and 6 kept the number of parasites down to a trace or nil for from five to six days.

TABLE 2.—*Trypanocidal Effect of Arsphenamin, Neo-Arsphenamin and Sulpharsphenamin*

| Compound | Dose, Mg. per Kg. | Route | Series 5: Examination for Trypanosomes, Days After Injection | | | | | | | Series 6: Examination for Trypanosomes, Days After Injection | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Arsphenamin..... O | 2 | Iv | Few | +2 | +4 | D | .. | .. | .. | Few | +1 | +4 | D | .. | .. | .. |
| | 4 | Iv | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Neo-arsphenamin.... P | 4 | Iv | Few | +2 | +4 | D | .. | .. | .. | — | — | Trace | — | — | +1 | +2 |
| | 6 | Iv | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Neo-arsphenamin.... Q | 4 | Iv | Few | +2 | +3 | D | .. | .. | .. | +4 | D | .. | .. | .. | .. | .. |
| | 6 | Iv | — | Trace | +1 | +4 | D | .. | .. | Trace | — | .. | .. | .. | .. | +1 |
| Sulpharsphenamin... R | 14 | Im | +2 | +2 | +4 | D | .. | .. | .. | +4 | D | .. | .. | .. | .. | .. |
| | 18 | Im | Few | — | — | — | — | — | — | Few | — | — | — | — | — | — |
| | 14 | Iv | +1 | +1 | +2 | D | .. | .. | .. | +1 | Few | +1 | +1 | +1 | +1 | +2 |
| | 18 | Iv | Few | Trace | — | — | — | — | — | Trace | — | — | — | — | — | — |
| Sulpharsphenamin... S | 14 | Im | Few | Few | Few | +1 | — | — | +1 | +2 | +4 | D | .. | .. | .. | .. |
| | 18 | Im | — | — | — | — | — | — | — | Few | Trace | — | .. | .. | .. | +1 |
| | 14 | Iv | +2 | +3 | +4 | D | .. | .. | .. | +2 | +4 | D | .. | .. | .. | .. |
| | 18 | Iv | +1 | +1 | +2 | +4 | D | .. | .. | Trace | — | — | — | — | — | — |
| Sulpharsphenamin... T | 14 | Im | +2 | +2 | +2 | — | — | — | — | +3 | +3 | +4 | +2 | +4 | D | |
| | 18 | Im | Few | — | — | — | — | — | — | +1 | +1 | — | — | — | — | — |
| | 14 | Iv | Few | — | — | — | — | — | — | +1 | +1 | +1 | — | — | — | +1 |
| | 18 | Iv | Trace | — | — | — | — | — | — | — | — | — | — | — | — | — |

The technic employed in our trypanocidal tests was essentially the one described by Voegtlin and Miller,[8] which is briefly as follows: A seed rat, infected with *Trypanosoma equiperdum* (the parasite of dourine or horse syphilis) and showing about 200,000 parasites per cubic millimeter of blood, was bled by decapitation directly into 5 c.c. of saline solution containing 2 per cent. of sodium citrate, and about 0.5 c.c. of the resulting suspension of parasites was injected intraperitoneally into each of a series of healthy, nonpregnant albino rats weighing between 100 and 150 gm. After twenty-four hours, the experimental animals usually developed an infection of about 100,000 or more parasites per cubic millimeter of blood, and if left untreated they generally died a few days later.

The injection of the drug to be tested was carried out as follows: The substance was dissolved in distilled water, and the concentration so adjusted that the volume of each dose was 1 c.c., which was injected intravenously or intramuscularly by means of a record syringe. For injection were selected rats showing between 150,000 and 200,000 trypanosomes per cubic millimeter of blood, as a uniform grade of infection is very important for accurate work. The dose that reduced the parasitic count within twenty-four hours to

When we come to sulpharsphenamin, we notice that 14 mg. was generally insufficient to sterilize the animal within seventy-two hours. Out of fifteen such injections, only five proved sterilizing for three days, while 18 mg. per kilogram almost always kept the animal sterile during the period of observation, there being only one or two exceptions. Thus, we see that the minimum effective dose for arsphenamin is about 4 mg. per kilogram; for neo-arsphenamin, from 4 to 6 mg., and for sulpharsphenamin from 14 to 18 mg. Moreover, if we should compare the trypanocidal value of these compounds on the basis of their arsenic content,[8] the ratio will be about the same, namely, $4 \times 0.30 = 1.2$ mg.; $6 \times 0.20 = 1.2$ mg., and $18 \times 0.22 = 3.96$ mg., or, approximately, 1 : 1 : 3. In other words, the minimum effective dose of sulpharphenamin contains more than three times as much arsenic as either arsphenamin or neo-arsphenamin.

Another fact worthy of observation is the similarity of the results obtained in Series 2, 5 and 6 with the various brands of sulpharsphenamin, regardless of the route of administration. This is especially noteworthy

8. The average arsenic content of arsphenamin is about 30 per cent.; of neo-arsphenamin, 20 per cent., and of sulpharsphenamin, about 22 per cent.

in view of the general opinion of the greater efficacy of the intramuscular route.

We now possess the data for computing the criterion of chemotherapeutic efficiency—the chemotherapeutic index. Granted that the average lot of sulpharsphenamin passes the toxicity tests at about 400 mg. per kilogram, and that its minimum effective dose is about 18 mg. per kilogram, its chemotherapeutic index is $\frac{\text{M. T. D.}}{\text{M. E. D.}} = \frac{400}{18} = 22.2$. On the other hand, most of the brands of neo-arsphenamin now on the market have a maximum tolerated dose of 300 mg. per kilogram, some brands passing regularly at from 350 to 400 mg. With its minimum effective dose of from 4 to 6 mg., its chemotherapeutic index is $300 \div 6$, or 50. Similarly, the chemotherapeutic index for arsphenamin is $120 \div 4$, or 30.[9]

In Table 2 are given the results of two series of experiments performed by the same persons and with materials and under conditions as nearly alike as possible. The only element of difference was the time, Series 6 being carried out two weeks after Series 5. The purpose of Series 6 was primarily to discover whether or not like experiments give like results.

Table 2 clearly illustrates the point we made above, namely, that not only are somewhat different results occasionally obtained when two persons perform the same trypanocidal test, but also the results vary even when carried out by the same investigator under conditions and with materials as nearly alike as possible. Thus, we see that a dose of 4 mg. per kilogram of neo-arsphenamin P, which in Series 5 was unable to render the blood of the animal free of parasites even for twenty-four hours, proved effective in Series 6. Similarly, sulpharsphenamin S, when given intravenously in doses of 18 mg. per kilogram, could not prevent the animal in Series 5 from succumbing on the fifth day, while the animal in Series 6 similarly treated became practically free from trypanosomes within twenty-four hours after injection and remained sterile for seven days.

However, these variations were not the rule. In most cases, the results obtained in both series of tests were quite close, and in a number of instances exactly the same. This is particularly true in the case of arsphenamin O and sulpharsphenamin R. The variations are therefore to be viewed only as a reminder of the great care that must be taken in the performance of experiments of this character, in which so many factors are involved.

### CONCLUSIONS

1. Whether we evaluate the drugs studied in this paper on the basis of the absolute weight of their respective minimum effective dose or on that of their arsenic content, we must conclude that much more sulpharsphenamin (or the corresponding French product, sulfarsenol) is required to sterilize animals infected with *Trypanosoma equiperdum*, than arsphenamin or neo-arsphenamin. In the same series of experiments, it required about 18 mg. of sulpharsphenamin per kilogram to produce the results obtained with, approximately, 4 mg. of arsphenamin or 6 mg. of neo-arsphenamin.

2. Taking the chemotherapeutic $\frac{\text{Maximum Tolerated Dose}}{\text{Minimum Effective Dose}}$ index, as the criterion of therapeutic efficiency, sulpharsphenamin based on trypanocidal tests is considerably inferior to arsphenamin, and at most one half as efficient as neo-arsphenamin.

3. The trypanocidal efficiency of sulpharsphenamin is practically the same, whether administered intramuscularly or intravenously.

9. All samples of arsphenamin used in this work passed at 120 mg. per kilogram.

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## METABOLISM AND REFLEX IRRITABILITY IN ANESTHESIA *

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The accompanying chart was compiled by Dr. Will Shimer of Indianapolis, two years ago, and conforms in general with charts of the same purpose compiled by others. It shows the metabolic rate in the average normal person from birth to the age of 80 years, estimated in calories per hour per square meter of body surface.

This paper is based on clinical observation during the last three years, with the average metabolic rate in surgical patients as the foundation for consideration.

We have observed from the standpoint of anesthesia that a curve of reflex irritability follows a course parallel to that of metabolism. Cell oxygen demand, of course, is the same curve as that of metabolism.

Proper anesthesia, with any method, means the obtundation of body reflexes to the point at which they do not interfere with the progress of the operation. Anesthesia should be as light as possible and accomplish this, but required anesthesia depth varies for different operations, according to the activity of local reflexes.

Assuming a given anesthetic depth for any operation, the amount of the anesthetic agent in the nerve cell required to produce that depth increases or decreases proportionately with the increase or decrease of metabolism. Therefore, a curve drawn to cover the required amount of anesthetic agent throughout life will parallel the metabolic curve here shown.

Temperature, emotional excitement, toxemias and physical effort are, approximately in the order named, the common influences that change the course of the metabolic curve.

We may add to the normal metabolic rate about 7 per cent. increase for each degree of fever. At the periods of higher metabolic rates here shown, the temperature influence is probably greater than at the periods of lower metabolic rate, but it will average in the neighborhood of 7 per cent. for each febril degree.

Emotional activity or excitement probably stands first among these influences on metabolism, but it is as yet unmeasured. Fear, apprehension, anxiety, anger, etc., have a profound effect on the metabolic curve, usually in an upward direction. Here, again, it is probable that the influence is greater at the periods of higher metabolism than at the lower. Rarely, the influence is depressing or in a downward direction, but this is so uncommon that it forms the exception, making the upward influence the rule.

The decided upward curve of emotional excitement is the *immediate* result. The postimmediate or reactionary result, i. e., the result after removal of the cause, is in a downward direction to a compensatory degree. We, as anesthetists, are interested in the *immediate* result.

* From St. Vincent's Hospital.
* Read before the meeting on anesthesia in the Section on Miscellaneous Topics at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

Physical effort per se increases metabolism, proportionately to the violence of the effort. The reactionary phase, following the metabolic increase of preanesthetic emotional activity and of induction struggling, does not occur immediately anesthesia is induced, but their influence is carried for a considerable time during the anesthesia, roughly estimated from twenty minutes to three quarters of an hour.

Toxemias of various sorts influence the metabolic curve either upward or downward, but our experience has not been enough to permit of an attempt to classify this influence from an anesthetic point of view. However, it is at once apparent, on the briefest examination of the patient, whether the influence is up or down.

The curve of the three influences fever, emotional excitement and physical effort is elevated in proportion to the separate effects of each, each adding its quota in the result. The element of toxemia, if stimulating, adds still further to this result, but, if depressing, serves as an inhibitor, holding down at least the clinical manifestations of the increase of the other three influences.

Reflex irritability, excepting in diseases of the central nervous system, follows this curve, no matter what may be the direction or the cause producing it, and, as required reflex obtundation is the criterion governing anesthetic depth, this becomes the central point of this paper.

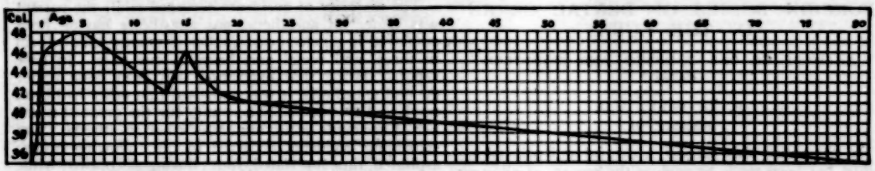
Knowing the curve of metabolism, reflex irritability and oxygen demand, together with the aforesaid influencing factors, fever, emotional activity, etc., a prognostication of the anesthetic result and the plotting of the anesthetic course become possible and practical. We have now many agents and methods at hand, and there is no sensible reason whatever for confining our anesthetic practice to any one drug, method or combination.

As age increases after adult life is attained, anesthesia becomes less difficult with any agent.

Much has been said for and against preanesthetic medication. The mechanism of action of the more common drugs in use for this purpose, together with a consideration of how and why they are employed, becomes an essential part of this paper.

In this consideration, we must have one idea in mind, namely, that of reducing metabolic activity and reflex irritability in each case to as nearly a standard as possible, and this standard should be the base line of the curve charted here (about 36 calories an hour). At present, we cannot measure drug dosage accurately enough to accomplish this, but our efforts should be turned in that direction.

In attempting to reduce or lower the metabolic curve, there are two things to be considered: (1) physiologic and (2) psychic sedation.




Metabolism curve in normal person from birth to 80 years, in calories per hour per square meter of body surface.

Briefly, the following observations coincide with the foregoing considerations:

ANALYSIS OF OBSERVATIONS

A child of 4, 5 or 6 years of age requires a greater dose of the anesthetic agent per pound of body weight to produce a given degree of reflex obtundation than a subject at any other period of life. Add to the high metabolism of age a temperature of say 3 degrees, and we have the metabolism and reflex irritability increased 21 per cent. It is foolhardy to attempt a laparotomy under nitrous oxid in such a case. To analyze this case, for example, as metabolism rises so does the cell oxygen demand rise. In nitrous oxid anesthesia, we must first of all fulfil the cell oxygen demand, and, as the oxygen must be increased, the dose of nitrous oxid is necessarily decreased in proportion. If the oxygen demand is low, as in adult life, with low reflex irritability, there is room in the mixture for an adequate dose of nitrous oxid to produce quiet and satisfactory anesthesia, if not relaxation. But in this case, in which the reflex irritability is extremely high, an adequate dose of nitrous oxid is impossible. Ether, being more potent, requiring only a 4.5 per cent. to 5.5 per cent. cell saturation, is the agent of choice in this case.

This analysis accounts for difficulties encountered with nitrous oxid in these cases without local or preanesthetic adjuvant anesthesia. The analysis holds good for all patients throughout life, and it is for the anesthetist to elect the anesthetic method in each case.

In the first, or physiologic, sedation, morphin and its allied drugs stand first. Here, the dosage is of importance. For example, in extreme age, only a small dose is necessary to carry the patient to near the base line, whereas, in the younger individual with the higher metabolic rate, a comparatively higher dose is required to accomplish the same purpose. If we add to the higher metabolic rate of the younger patient the metabolic elevating influence of fever or stimulating toxemia, thyrotoxemia, for example, a proportionately larger dose of morphin per pound of body weight is necessary.

In children, our courage has thus far failed us, and we have not attempted increased morphin dosage commensurate with the higher metabolic rates. Our knowledge of the various specific actions of the drug is not yet sufficient.

Morphin alone does not sufficiently reduce psychic activity to serve our purpose here. At present, we depend on scopolamin to accomplish this part of the work, and the dose is proportionate to the degree of emotional excitement manifested by the patient. Other drugs, such as chloral or its allies, may be used for the same purpose, the idea being always to reduce the psychic or emotional elevation of metabolism and its accompanying reflex irritability.

Atropin has for so long been given with morphin that it has become a habit, and is given often without thought of its action. Primarily given to counteract the

respiratory depression effect of morphin, its use has been continued habitually in many places.

Atropin is a metabolic stimulant, and it is probably through this mechanism, in a great measure, that it stimulates respiration. To give it with morphin as a preanesthetic narcotic is wrong, except when it is given with full knowledge of the mechanism of its stimulation, or for its drying effect on the mucous secretions of the respiratory tract.

### CONCLUSIONS

1. A just consideration of the metabolic and reflex irritability curve throughout the various ages of life, plus the influence of hyperpyrexia, emotional excitement and pathologic toxemia on this curve, will enable us better to anticipate probable anesthetic difficulties, and to plot the course and method of anesthesia for each case.

2. Preanesthetic medication must be directed toward the reduction of the metabolic and reflex irritability curve to a base line standard. The dose and combination of drugs must be dependent on one element, namely, the reduction of the metabolic and reflex irritability curve. This is to be accomplished through: (1) physiologic metabolic depression, and (2) depression of psychic activity to the same purpose.

## FOREIGN BODIES OF DENTAL ORIGIN IN THE LUNGS

### ANALYSIS OF ONE HUNDRED AND SEVENTEEN CASES *

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In presenting this subject, a careful and painstaking effort has been made to analyze the reports of all cases that have been published in this, as well as in foreign countries. No attempt to review cases through personal communication has been made. A few cases giving fragmentary reports of foreign bodies of dental origin have been reviewed but not included in this analysis, as it is my purpose in this contribution to give an accurate and complete analysis of only those cases reported in detail up to the present time. There have undoubtedly been many more cases of this type but not published.

We are all familiar with the work of our contemporaries in this particular field. The most comprehensive report hitherto made is that by Hedblom. It is to his tabulation that I am indebted for clues to some of my references. Arrowsmith, Wood, Hoffman, Jackson and Forbes, as well as many others, have made contributions to this subject. A review of the older literature is of interest in that we find that as early as 1717 Verdon performed a "bronchotomy" for a foreign body in the trachea. In 1854, years before the laryngoscope and bronchoscope were in use, Gross published an exhaustive work on the subject of "Foreign Bodies in the Air Passages." In 1860, Horace Green wrote a paper on "The Difficulty and Advantage of Catheterism of the Air Passages in Diseases of the Chest," embodying the work of several years and reporting on 106 cases treated.

The present analysis includes foreign bodies of the following types: teeth, dental burrs, gold crowns, dental plates, fillings, blade of forceps, plaster of Paris, hard rubber from dental mouth gags, disks of Allen's dental cement, and nerve canal reamers. The case that I previously reported will be included in this report. The order of occurrence is given in Table 1.

TABLE 1.—*The Order of Occurrence*

| | Number |
|---|---|
| Teeth | 76 |
| Artificial teeth | 6 |
| Dentures or dental plates | 8 |
| Dental burrs or instruments | 9 |
| Crowns (gold) | 7 |
| Dental fillings | 3 |
| Blade of forceps | 1 |
| Plaster of Paris | 1 |
| Hard rubber from dental mouth gags | 1 |
| Disk of Allen's dental cement | 1 |
| Nerve canal reamers | 1 |
| Gold three tooth bridges | 2 |
| Dental broaches | 1 |
| Tartar from teeth | 1 |

### LOCATION OF FOREIGN BODIES

In this type as well as in other types of foreign bodies, the right bronchus is the favorite site of lodgment, the ratio being 2:1 in the series, fifty-six being in the right, twenty-eight in the left bronchus, and one in the treachea. The location was not stated in twenty-nine cases.

### NATURE OF ACCIDENT

The majority of accidents occurred while the patient was under an anesthetic, gas anesthesia having been employed in nineteen cases, ether in twenty, chloroform in three, and rectal anesthesia in one case. In case reports stating that extraction had been done under general anesthesia, it was supposed that ether had been used, and this probably accounts for the greatest number of accidents occurring under ether anesthesia. The remaining accidents occurred in the following order: aspirated, time not stated, four; during sleep, two; while eating, one; while coughing, two; while in the dental chair, nine; when kicked by a horse, one; when making a cast for the mouth, two; while in petit mal, two; while in intoxicated stupor, one.

The nature of the accident was not stated in fifty cases. In all but one case, some operation about the mouth was being performed when the accident occurred.

### SYMPTOMS AND SIGNS

The most constant and definite symptom is a cough, which varies from an occasional one to one that is persistent and accompanied by profuse expectoration. A case reported by Chambers is the only one in which cough was not an early or late symptom. The sojourn of the foreign body was five days.

In this series, sixty-four patients developed cough as an early or a late symptom. Cough was the only symptom in six cases; dyspnea was present in seventeen; pneumonia,[1] in two; cyanosis, in two; pain in the chest, in twenty-eight; hemoptysis, in fourteen; nausea, in one; elevation of temperature, in nineteen; profuse expectoration, in forty; consolidation of the lungs, in five; night sweats, in four, and in one case reported by J. Israel the secretion from the bronchi contained actinomycotic rosettes (the sojourn of the foreign body was one and one-half years). The symptoms were not stated in thirty-one cases. Thirty-two patients developed lung abscess. Of this number, seventeen recovered, thirteen died and the results were uncertain in two

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Pneumonia is so often erroneously diagnosed by misinterpretation of the physical signs in foreign body cases that it may well be questioned whether true lobar pneumonia existed in these two cases.

cases. No distinction has been made between the early and the late symptoms, the two being included under one classification.

### SOJOURN

The sojourn in the lungs of the foreign bodies presented in this series varied from four hours to thirteen years. In the case of short duration, the foreign body was removed bronchoscopically by Forbes. This patient was in a dental chair having a gold crown fitted to the right upper canine tooth. The crown became loosened, during a fit of coughing, and disappeared. The suspicion of the dentist was aroused by the immediate development of coughing, and a roentgen-ray examination of the chest was ordered. The management of this case by the dentist is worthy of being followed by others of his profession.

In the case of thirteen years' duration reported by W. C. Carpenter in 1842, four false teeth on silver clamps were aspirated during a fit of coughing. Roentgen-ray examination was not made and bronchoscopy not attempted. The patient died; the postmortem findings are given in Table 2.

### TREATMENT

The expectant or symptomatic treatment was employed in thirty-eight cases. Of this number, nineteen patients recovered and sixteen died. The results were uncertain in three cases. Peroral bronchoscopy was employed in forty-four cases, being successful in thirty-eight, in which the patients completely recovered.

Lower bronchoscopy through tracheal wounds was successful in six cases. All of these patients recovered. Thoracotomy for drainage of lung abscess was necessary in twenty-three instances, with thirteen recoveries, six deaths and uncertain results in four cases. Tracheotomy was performed four times, with three successes and one failure. Artificial pneumothorax was successfully employed in one instance. One of the six bronchoscopic failures was complicated by a lung abscess and later resulted in death. Another death followed a partial pneumonectomy, four previous attempts to remove the foreign body bronchoscopically having failed. This foreign body, a dental burr, had lodged in the upper outer lobe bronchus. This case report is obtained from Hedblom's tabulation, and I have been unable to confirm it, as the references are not available.

In the remaining four bronchoscopic failures, the patients recovered. The foreign bodies were probably coughed up.

### RESULTS

Of the 117 patients in the entire series, eighty-four recovered. The results were uncertain in nine, and there were twenty-four deaths. Fourteen patients died as the result of lung abscess, one following tracheotomy, three from symptoms simulating tuberculosis, one from bronchiectasis, one from pneumonectomy; in three cases, the cause of death was not stated.

Of the eighty-four cases in which the patients recovered, the foreign body was removed bronchoscopically in thirty-eight instances; it was coughed up in thirty-seven instances; it was removed by lower bronchoscopy through tracheal openings in five instances, and by successful tracheotomy in three, and one patient was relieved by artificial pneumothorax.

### COMMENT

Foreign bodies of dental origin produce symptoms similar to those arising from other inorganic objects. The train of symptoms to be expetced are cough, pain in the chest, hemoptysis and dyspnea. These may be the only symptoms produced for years, while, on the other hand, lung abscess may develop within a very short time. Warrick and Monro report cases of death on the tenth and on the sixteenth day following the aspiration of teeth. In each instance the entire lung was gangrenous.

This much can be said with certainty: "If a foreign body is aspirated into the bronchi and allowed to remain, abscess formation will likely follow, in the majority of cases."

In this series there were two cases of foreign bodies, of five years' sojourn in the lungs, which produces no symptoms other than cough and hemoptysis. In one case reported by Lynch, plaster of Paris had been aspirated and in the other case reported by me, the foreign body was a dental plate. Both patients made complete recoveries after bronchoscopic removal.

TABLE 2.—*Postmortem Findings*

| Author | Findings |
|---|---|
| Bayer, H. | Tooth causing lung abscess |
| Carpenter, W. C. | Fistula of lung opened into large empyema cavity containing pus; lung collapsed; denture with four teeth found in the pleural cavity; left lung tuberculous |
| Robinson (Mayo Clinic) | Bilateral bronchiectasis, left empyema, tooth in lower lobe of right lung |
| Goodlee, R. J. | Advanced bilateral tuberculosis; cavity of right apex; tuberculosis of the cecum; bilateral lower lobe bronchiectasis; tooth in lower right lobe of bronchus |
| Israel, J. | Cavitation in left lung; fragment of tooth in pleural cavity |
| Warrick, J. S. | Complete obstruction of left main bronchus; whole lung gangrenous; crowned bicuspid tooth wedged into bronchus; ball valve obstruction |
| Wigg, A. E. | Large, empty empyema; small abscess in middle lower lobe; bicuspid tightly impacted |
| Munro, T. K. | Entire lung gangrenous |
| Morrison, R. | Pericarditis; tooth stump impacted in bronchus; missed in resection by three-fourths inch |
| Fowler | Tooth found impacted in a secondary bronchus |
| Poulet, A. | Right lung adherent; exudation marked; piece of tooth in hilum of right bronchus |
| Schulz, J. | Advanced tuberculosis in both lungs, with large cavity in right bronchiectasis; tooth found in bronchial bifurcation |
| Tees, F. J. | Small piece of tartar found in abscess in right lung, connecting with interlobe or abscess and so with pleural cavity |
| Wall, C. | Tooth plate found in right bronchus; secondary bronchiectasis of right lower lobe; septic pneumonia in left lung |

When dental work has been done and any portion of the denture is missing after the operation, the dentist should satisfy himself that the tooth is not in the bronchi. The importance of this is readily realized by a study of this series of cases. When the object was coughed up or removed early there was no mortality; but in the neglected cases, abscess formation was the result.

A diagnosis can be made by the history in many cases. If not, a roentgenogram should be made. Should this not be conclusive, bronchoscopy in skilled hands should be performed.

The indications for bronchoscopy for a foreign body as outlined by Jackson are as follows:

1. The appearance in the roentgenogram of a foreign body or of any suspicious shadow.
2. Cases in which a clear history is given of the patient's having choked on a foreign body and in which the foreign body was not afterward found.
3. Cases in which there are signs of stenosis of the trachea or the bronchus.
4. In any case suspected of bronchiectasis.
5. In the absence of any history of a foreign body, the patient giving symptoms of pulmonary tuberculosis, without

the finding of bacilli in the sputum, and especially if the physical signs are at the right base, and, above all, if there are also physical signs of pleural effusion.

6. In case of doubt, bronchoscopy should be done.

Jackson recognizes no absolute contraindications to bronchoscopy.

If the presence of a foreign body has once been definitely established, there is only one treatment—bronchoscopy. In this connection mention should be made again of the results obtained by bronchoscopy in this series—forty-four bronchoscopies without a death. In six cases the foreign body was not found, but no deaths were directly attributable to the operation.

If a study of this series of cases can be taken as an index for all types of foreign bodies, no argument can be sustained in favor of the so-called expectant or symptomatic treatment. Of the thirty-eight patients treated by this method, sixteen died, while of the thirty-eight patients receiving early bronchoscopic treatment, all recovered. As regards the expectant treatment, Jackson says: "We do full justice to our patients when we tell them that while the foreign bodies may be coughed up it is very dangerous to wait; and further that the difficulty of removing increases with each hour the body is allowed to remain."

When the amount of dental surgery being done is contrasted with the small number of dental objects aspirated, the dental profession is to be congratulated for its excellent surgical technic. Gardner of the Mayo Clinic employs the following technic for prevention of accidental aspiration of foreign bodies: The patient should be watched quite as carefully with a local anesthetic as with a general one. The use of gauze sponges in no way interferes with the work of the operation and cares also for the hemorrhage. Furthermore, the dentist, by careful examination of the teeth before operation, may ascertain whether the work might displace pieces of tartar, fillings or even the teeth themselves, during the anesthetization. The condition of the patient undergoing any operation often requires the use of the gag during the administration of ether, and the anesthetist should know the condition of the patient's teeth before the anesthetic is started, since such an instrument often displaces from a tooth foreign bodies that might be inhaled.

## CONCLUSIONS

1. In every operation about the mouth, care should be exercised to prevent aspiration infection.

2. Symptoms in most cases are immediate; namely, cough, pain in chest and hemoptysis.

3. Later symptoms may simulate pulmonary tuberculosis. Seven cases in this series were diagonsed as tuberculosis. Tuberculosis may coexist with lung abscess.

4. Bronchoscopy is indicated in any case as a diagnostic measure if the history and roentgen-ray findings are not conclusive.

5. When the presence of a foreign body has been definitely established, there is only one treatment—bronchoscopy.

6. Expectant treatment is always hazardous, and lung abscess may develop at any time.

7. Death is due in most instances to lung abscess, bronchiectasis and gangrene.

## REPORT OF CASE

I. F., a woman, aged 50, referred to me, Feb. 19, 1920, by Dr. B. L. T., had been struck in the left temporal region, seven years before, by an ax, and had been rendered unconscious. Since that time, at various intervals, she had been subject to attacks of epilepsy. Five years before, during an epileptic seizure, she fell and struck her head on a cement floor, a plate of false teeth was broken, and a small portion of the plate was never found, but the patient and her family dismissed it as being lost. Shortly after the accident, the patient began having an itching and tickling sensation in her throat, which gradually developed into a cough and became steadily worse, more so at night. Eighteen months after this injury, while bending over in order to clean out a spring house, the patient had a hemorrhage. She had hemorrhages at various intervals since, but only when stooping over. The patient's chest was roentgenographed at the sanatorium where she was being treated, and the presence of a foreign body was discovered in the right bronchus. She was then questioned as to the history of having aspirated a foreign substance into her lungs, and recalled that she had broken her dental plate five years before and that a small portion of it was lost at the time of the accident.

I referred the patient for further roentgen-ray examination to Dr. J. T. McKinney, who reported that stereoroentgen-ray examination with anteroposterior and postero-anterior plates showed a foreign body, more or less oblong, about 1.25 by 1 cm., lying obliquely in the inferior or descending branch of the right bronchus, opposite the ninth rib, according to the posterior markings, and opposite the fourth interspace, according to the anterior markings. Considerable pathologic change was noted at the base of the right lung, involving to some extent the parenchyma of the lung; a small, emphysematous area was present. There was a marked peribronchial thickening and fibrosis of the branches of the descending bronchi. Dr. McKinney suggested that the possibility of there being a few adhesions around this foreign body be taken into consideration. No definite areas of tuberculous infiltration were seen in either lung.

Dr. B. L. Taliaferro, physician in charge at the tuberculosis sanatorium where the patient was treated, reported that on admission to the sanatorium she stated that she had had the usual diseases of childhood, from which she made a good recovery. She had had hay-fever; otherwise she had been perfectly well until five years before. The illness began with tickling in the throat, a bad cough, profuse expectoration, small hemorrhages, loss of strength, and night sweats, with moderate rise of temperature at times. The case was diagnosed as tuberculosis and she was admitted to another sanatorium, at which she stayed at least three weeks. She was admitted to the tuberculosis sanatorium, April 2, 1919. Physical examination showed a few fine râles in the right apex, with slight bronchovesicular breathing and slight increased whispered fremitus, with dulness. In the right part of the back there were a few scattered râles from the third to the sixth dorsal spine. On admission, the sputum showed positive 2 on the Gaffky scale. The day after admission, the patient had a pulmonary hemorrhage of about a dram of blood. She continued from time to time to have heavy streaks or slight hemorrhages, none of which exceeded an ounce during her stay. Cough was severe and expectoration profuse in the morning. During the rest of the twenty-four hours, cough and expectoration were slight. She had several convulsions, which were probably epileptic in character. The patient was kept in bed almost continuously on account of her tendency to hemoptysis. Her symptoms did not appear to improve after several months' continued rest in bed; on the other hand, her expectoration increased in amount. The profuse expectoration and the slight physical findings led to the belief that possibly the patient had a deep seated cavity or a bronchiectasis, and she was advised to have stereoscopic roentgenograms taken. These showed a foreign body in the right lung behind the fifth rib. This body appeared to be something over a half of an inch in diameter and gave the appearance of possibly being a flattened bullet of about a 0.32 caliber. On close questioning, the following facts were brought out which the patient did not give in the history on admission. She said that about seven years before she was walking behind a man who was cutting wood and was accidently struck over the right eye by the pole of the axe. Since that time she had been subject to fainting spells, which we had diagnosed as

epilepsy. About five years before, in one of these attacks, she crushed her plate of false teeth. After the attack was over she felt as if a part of this plate had lodged in the windpipe, and the cough and expectoration dated from about that time. Repeated examinations of the sputum were constantly negative except for the first examination. The patient was advised to have an operation performed to have this foreign body removed.

February 29, I sent the patient to the hospital, and on March 1, under ether anesthesia, I removed the foreign body from the right inferior bronchus. The time of operation was ten minutes. I used the Jackson adult bronchoscope and Jackson's alligator rotation forceps for extraction of the foreign body. The adhesions surrounding the foreign body were very adherent, and when the foreign body was pulled away a slight hemorrhage followed. I am indebted to Dr. McKinney for locating the foreign body and for the skilful manner in which he used the fluoroscope at the time of the operation. The patient had a slight hemorrhage following the operation. There was a slight elevation of temperature for two days. The uncontrollable cough from which the patient had suffered for the preceding five years disappeared the second day following the operation, not to return.

## ABSTRACT OF DISCUSSION

DR. W. B. CHAMBERLIN, Cleveland: Foreign bodies of dental origin present no further difficulties than foreign bodies of other origin; with the possible exception that many of them are exceedingly small and the difficulty of removing them is therefore increased. There is one point, however, which I should like to emphasize. Dr. Gill spoke of the relatively few cases that occur, in comparison with the tremendous number of dental procedures. In the first place, I do not believe that the published reports give any fair or accurate idea of the number of these cases that occur. In the second place—and this statement is based on conversation with a great many dentists—I wish to emphasize the lightness with which the average dentist, who has never had an experience of this kind, speaks of the possibility. He has never had the thing happen to him and, therefore, he thinks that the danger is insignificant. I think it is up to us as bronchoscopists to emphasize this danger to the dentists; and whenever we have an opportunity to present this subject before a dental society, we should improve the opportunity to do so.

DR. T. E. CARMODY, Denver: The fact that more foreign bodies are not aspirated will be brought home to any one who will read the investigations of Lynah following tonsillectomy. As to dental origin, I think this paper should be entitled "Foreign Bodies of Oral Origin," because it gives the idea that the dentist is to blame for all of these. I have known three teeth to be knocked out with the mouth gag in doing a tonsillectomy. The physician does not always examine the teeth thoroughly to find whether there are temporary teeth or crowns. These cases possibly occur more frequently with physicians than with dentists because of the fact that physicians are doing the operation under general anesthesia and the cough reflex is entirely abolished, while the dentist usually works without an anesthetic.

DR. CHEVALIER JACKSON, Philadelphia: I think that Dr. Carmody's suggestion that the foreign bodies under discussion might be included under the general head of "oral" foreign bodies is excellent; but if this were done it would be well, perhaps, to subclassify them as of dental origin in order to bring forcibly to that class of dentists, to whom Dr. Chamberlin referred, the fact that there is a definite element of risk in their work, and that every one interested in exodontia ought to match up all the pieces of teeth and fillings after he is through with each case, just as the abdominal surgeon has the nurse count the sponges. Unless he does that, sooner or later he will regret it. Though the accidents are exceedingly rare, they have occurred in the hands of the most skilful men. The loosening of the teeth by the gag is something that we had to contend with a good deal in bronchoscopy formerly but has been exceedingly rare since the introduction of the William F. Moore bite block, on which the patient closes his teeth. If the patient has any weakly attached dental appliance, we avoid pressure on it or have it temporarily removed. That no accidents have happened so far is due to the unusual skill, experience and training of the assistants who hold the head and at the same time the bite block. Without training, this is a more difficult job than handling the bronchoscope.

# A CASE OF ORBITAL LYMPHANGIOMA*

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M. B., a girl, aged 8, reported to the outpatient department in March, 1921, because of a prominent blind left eye. The mother had a very difficult labor. When the patient was 1 year of age, the parents observed that the left pupil was white and the eye apparently sightless. At 2 years of age

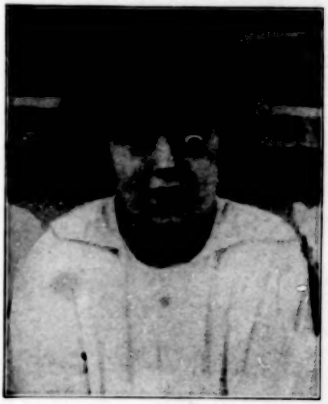


Fig. 1.—Reproduction of school picture of 1920, showing proptosis.

the left eye was noticeably more prominent than the right. Since that time the protrusion had gradually become more marked. The eye had never been painful or inflamed. The patient had been shunned by her schoolmates because of her repelling appearance.

*Examination.*—Vision of the right eye was 0.6; of the left eye, light perception. External examination of the right eye was negative.

Examination of the fundus revealed a large coloboma below, involving the inferior third of the disk and the choroid. Scattered over the fundus were numerous areas of healed chorioretinitis.

There was marked proptosis of the left eye. The inferior margin of the upper lid was equal with the right; the eyeball pointed downward and slightly outward, exposing a large portion of the superior sclera. Motion was limited upward and nasally; the conjunctiva, cornea and anterior chamber were normal. The iris was atrophic, with multiple posterior synechiae. The lens showed a mature cataract. The fundus was not visible. Tension was normal.

* From the Department of Ophthalmology, University of California Medical School.
* Read before the Section on Ophthalmology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

On palpation, a mass was outlined in the superior nasal portion of the orbit which was fluctuant, freely movable, not attached to the globe, and not tender to pressure.

The condition was diagnosed as a cyst of the left orbit. An exploratory operation was performed through a conjunctival incision. While the operator was dissecting down to the mass, there was a sudden gush of colorless fluid followed by immediate recession of the exophthalmos. An unsuccessful attempt was made to procure part of the cystic mass for diagnosis. At the time the patient was discharged, two weeks later, there was no evidence of recurrence.

In June, 1921, two and a half months later, the patient returned with the proptosis in its former state. A Kroenlein operation was deemed advisable. Through a bow and arrow incision, about 2.5 cm. back of the outer canthus, the orbit was exposed in the usual manner. When the periosteum was opened, a cystic mass could be palpated at the upper nasal side of the orbit, which dissection revealed as a multilocular cyst about 2.5 cm. in length extending along the inner wall

Fig. 2.—Result, two years after operation.

of the orbit. The cyst was carefully dissected out and the incision closed.

The wound healed by primary intention, and the patient had an uneventful recovery. Examination four months later showed a slight exophthalmos. There was no impairment of motion. Purely for cosmetic reasons, it was suggested that the cataract be extracted at a later date. In May, 1923, approximately two years later, on inquiry, the school nurse reported that the patient had been a different child since the operation; the eye did not protrude, and she now played with the other children; she was also getting stronger, and was much happier.

Microscopic examination of the tissue removed showed endothelial lined spaces coursing quite irregularly and supported on a simple fibrous tissue layer varying in thickness. The endothelium also varied considerably in thickness, and stained deeply with hematoxylin; scattered in it were numerous irregular calcified bodies, irregularly warty in outline and showing a certain amount of concentric, ringlike pattern. In many places the thickened endothelial masses showed irregular vascularization, as if undergoing degeneration. A diagnosis was made of lymphangioma, with thickening of endothelium and calcified concretions.

A lymphangioma can be described as a growth, congenital or acquired, consisting of newly formed dilated lymph spaces and lymphatic vessels, the resulting structure resembling cavernous tissue. It is found in the orbit, conjunctiva, eyelids, caruncle and other ocular structures. Parsons [1] says that the structure is that of cavernous hemangioma except that the spaces contain lymph instead of blood. In his description of a hemangioma, he says that "the spaces are lined with a single layer of endothelium and are separated by a network of bands of fibrous tissue." Fehr [2] and Burnett [3] found in hemangioma calculi, which after decalcification consisted of concentric layers of hyaline material. Delafield and Prudden [4] state that, if dilated lymph vessels form a circumscribed mass, it is often called a lymphangioma. According to Adami and McCrae,[5] the majority of tumors called lymphangioma are in reality lymphangiectases. Lymphangioma cavernosum should be called cavernous lymphangiectasis. Though we have made the diagnosis lymphangioma, we do it merely in conformity with the precedent already established. The ending angioma is a misnomer, the growth being not a tumor in the true sense of the word, but simply a dilatation of lymph vessels, either congenital or due to some hindrance to the flow of lymph. The mass is merely a circumscribed collection of the vessels, with cystic formations. Although we refer to the tumor in this paper by the misnomer of lymphagioma, we feel that it should be called a lymphangiectasis.

## CASES REPORTED IN THE LITERATURE

In reviewing the literature we have been able to find only thirteen cases of orbital lymphangioma, and none reported as lymphangiectasis.

The first case to be reported was by Forster [6] in 1878. A man, aged 46, had for the preceding ten years noticed a gradually increasing proptosis of the left eye. A clinical diagnosis of sarcoma fibromatoseum was made. The tumor and globe were removed. The entire mass showed itself to be permeated by spaces of various sizes, between which were broad bands of connective tissue. The inner walls were lined with endothelial cells. The walls themselves were formed by layers of connective tissue fibers. The spaces contained numerous lymphoid cells, whereas the fibrillary walls showed large quantities of elastic fibers with blood vessels.

The second case to be described was by Wiesner [7] in 1886. A woman, aged 43, had a right orbital tumor which produced complete loss of function of the inferior rectus. Between the globe and the lower outer edge of the orbit was an ovoid, movable tumor about the size of a hazelnut. Through an incision parallel to the lower orbital edge, the mass was easily shelled out. Microscopic examination revealed a cavernous lymphangioma.

Ayers' [8] patient, a man, aged 53, had a tumor of the right orbit of three years' duration, which produced a proptosis. There was no pain, and the motion was unimpaired. Fundus examination showed a well marked optic neuritis. It was diagnosed as probable sarcoma, and the eyeball and tumor were enucleated. The microscopic diagnosis was lymphangioma cavernosum "probably due to occlusion of one or more lymph channels, causing engorgement, which in course of so long a time resulted in a mass of this size."

Silcock [9] reports a case of a woman, aged 21, who eight years previously had a proptosed left eye from which a tumor was removed. It recurred six years later and was

1. Parsons: Pathology of the Eye **2**: 727.
2. Fehr: Arch. f. Ophth. **44**: 3, 1897.
3. Burnett: Arch. Ophth. **26**: 12, 1897.
4. Delafield and Prudden: Textbook of Pathology, p. 527.
5. Adami and McCrae: Textbook of Pathology, p. 280.
6. Forster: Arch. f. Ophth. **24**: 107, 1878.
7. Wiesner: Arch. f. Ophth. **32**: 208, 1886.
8. Ayres: Am. J. Ophth. **12**: 321, 1895.
9. Silcock: Tr. Ophth. Soc. U. Kingdom **16**: 180, 1896.

again excised. The use of the galvanocautery gave temporary relief. Microscopically, the tumor was a lymphangioma.

In Wintersteiner's [10] patient, a boy, aged 12, there was a marked proptosis of the left eye that had developed gradually from birth. Motion was good in all directions. Because of

Fig. 3.—Side view, showing small amount of scarring.

an amaurotic eye, the globe and tumor were excised and the mass diagnosed as lymphangioma. Some of the spaces contained blood, and the diagnosis rested on a continuity with the perivascular lymphatics of the long posterior ciliary arteries.

In the case report of Kahn's [11] patient, a woman, aged 24, the left eye had become prominent over a period of six years, the rate of growth being very slow. Fuchs excised the tumor by resecting the external superior rectus muscles and drawing the eye nasally. It was removed without difficulty, and recovery was uneventful except for a permanent external rectus paralysis.

Fehr [12] reported a case of orbital lymphangioma cavernosum in a woman, aged 45, who had one and a half years previously noticed a slight prominence of the right eye. This gradually became more marked and, when seen by Fehr, there was a proptosis of 12 mm. The tumor was removed by Kroenlein's operation, and the mass found to fill the space between the globe and the orbital pyramid.

Two cases of simple lymphangioma of the orbit were reported by Maxwell.[13] The first case was that of a girl, aged 3 years. The mother stated that "the child had a cold in the right eye since birth. The last year the lower half of the right eye seemed more raised than the other." The conjunctiva was elevated by a grayish, semitranslucent mass, which pitted on pressure with a probe. A piece was removed for microscopic examination, and showed numerous empty spaces lined with endothelium. The therapy consisted of electrolysis, which retarded the growth.

In the second case, that of a girl, aged 3½ years, there was a proptosis of the left eye downward and outward of 3 mm. The tumor was treated by resection of as much of the mass as was possible through a subconjunctival incision and by electrolysis.

10 Wintersteiner: Arch. f. Ophth. 14: 613, 1898.
11. Kahn: Beitr. z. Augenh. (Deutschmann's) 7: 16, 1906.
12. Fehr: Centralbl. f. prakt. Augenh. 32: 134 (May) 1908.
13. Maxwell: Brit. J. Child. Dis. 12: 335 (Nov.) 1915.

Mackay's [14] patient, a girl, aged 15 months, had a right orbital lymphangioma, which paracentesis and excision failed to remove from the apex of the orbit. Roentgen-ray treatment produced a decided benefit, although, owing to the patient's irregular attendance, proptosis recurred at intervals of from one to three years. At the time of writing, the vision and movements were unimpaired, and recovery appeared complete.

Gradle [15] reports a cavernous lymphangioma in a girl, aged 7. The lower lid was pushed forward by an orbital tumor, which showed partially as a subconjunctival mass. The eye turned up and out, and protruded from 2 to 3 mm. Sections of the mass, which was removed in toto, showed it to consist of cavernous spaces "lined with endothelium and full of coagulated serum; the spaces being surrounded by lymphoid infiltration with some true follicles."

The lymphangioma of the orbit described by Cremer [16] was in a boy, aged 11. A small swelling had been present for one year, but increased in size rapidly following a blow with a stick, producing exophthalmos and ptosis. A slightly fluctuating mass was palpable, and was removed in toto. Sections showed it to be a cyst with its wall infiltrated with lymphocytes, full of vascular spaces.

Niosi's [17] patient, a woman, aged 60, had a tumor of the internal angle that had been present over a period of fourteen years, pushing the globe up and out into the brow. The tumor was found to reach the apex of the orbit, but entirely outside the muscle cone. The operative result was good, there being no impairment of motion.

In addition to the foregoing there are several of the type described by Hirschberg,[18] Kahn [19] and Dejone,[20] in which there was an orbital extension of a lymphangioma of the cheek, lid or conjunctiva. These we have not considered as distinctly orbital tumors.

## COMMENT

In reviewing the cases, we note that there is a wide variation in the age of the patients. The youngest was

Fig. 4.—Section through endothelial lined spaces with a calcified body.

a girl, aged 15 months (Mackay's patient), and the oldest a woman, aged 60 (Niosi's patient). In spite of this

14. Mackay: Tr. Ophth. Soc. U. Kingdom 35: 180, 1915.
15. Gradle: Arch. Ophth. 49: 520, 1920.
16. Cremer: Ztschr. f. Augenh. 44: 65, 1920.
17. Niosi, F.: Arch. di Ottal. 28: 219-246, 1921; abstr. Ophth. Lit., December, 1922, p. 514. (We were unable to procure the original article.)
18. Hirschberg: Centralbl. f. Augenh. 30: 2, 1906.
19. Kahn: Deutsch. Beitr. f. Augenh. 7: 16, 1906 (second case).
20. Dejone: Klin. Monatsbl. f. Augenh. 46: 37 (Jan.) 1908.

great difference of age, Parsons[1] believes that these lymphangiomas are congenital. Ayres[2] quotes three possibilities as to their development. The first is that they may develop from already existing lymph vessels, which become dilated as a result of stasis, owing to occlusion of larger lymph vessels. A second mode of development is not from preexisting lymph vessels but from newly formed lymph vessels that are the result of an active proliferation of endothelium that already exists. A third possibility is mentioned in which there is also a new formation of lymph vessels, which develop from connective tissue—granulation tissue, which is the result of the dilatation of spaces which gradually take on the character of true lymph-carrying spaces. The history of rapid growth following an injury in Cremer's patient, the definite history of trauma in the case report of Dejone, and the possibility of birth injury in ours make one consider the influence of trauma as a possible developmental factor.

Fig. 5.—Variations in endothelium (high power).

Ten of the fourteen cases, or 71 per cent., including the case reported, were in females.

As to the therapy, it is evident that Kroenlein's resection gives by far the most satisfactory results in deep-seated cases. Fuchs, in Kahn's case, operated by severing the rectus muscles, and during the procedure apparently caused sufficient damage to produce a permanent external rectus paralysis. Fehr's result with Kroenlein's operation gave a fine linear scar without impairment of motion or other cosmetic disfigurement. In the case reported, a similar result was obtained. Recently we have adopted the custom of having the incision and exposure of the orbit made by a general surgeon. Being accustomed to grosser surgery, it is done with greater facility and permits an easier and more nearly perfect closure.

380 Post Street.

## ABSTRACT OF DISCUSSION

Dr. Marcus Feingold, New Orleans: So few cases of lymphangioma of the orbit seem to be in existence that very few of us have seen even one case of this disease. It is thus impossible to discuss the pathology of these conditions. This is even more the case since the exact position of the lymphangioma in pathology has not been agreed on, or at least since several varieties (each of a different origin) are said to exist. One point might be discussed to advantage, the question of treatment. So far, all cases have been attacked surgically; but it seems worth while to suggest the possibility of treating the condition with radium, a suggestion that is based on the more than beneficial effect of radium in the angiomas frequently found in childhood. It must not be forgotten, however, that these hemangiomas represent locally malignant, infiltrating and destroying tumors, based undoubtedly on new formation of capillaries. Tissues of this kind are most easily attacked by radiant energy. Whether a particular lymphangioma of the orbit will readily yield to radium will depend on the nature of the lymphangioma. If the tumor belongs to the real tumor class with true proliferation of lymphendothelial cells, a beneficial effect from radium might be expected.

Dr. R. H. T. Mann, Texarkana, Texas: I want to offer one suggestion that has been of value to me in two cases of tumor of the orbit which I have successfully removed in the last year. In each of these cases, after the conjunctival incision had been made the fluid from the tumor escaped. By pulling the sac of the tumor forward and getting my little finger in, I could feel the outline of the tumor just as one does when one puts the finger in an orange and feels the hard peeling. That gave me much more space than otherwise, and I succeeded in removing both of these growths.

Dr. Walter R. Parker, Detroit: I have performed the Kroenlein operation eight times, so that my experience is very limited. I felt in each case that, if I had known the conditions present, I could have removed the tumor without doing the osteoplastic resection. Within the last two weeks, I have had an opportunity to try this procedure in a tumor of the left orbit in a woman, aged 25. The tumor could be plainly felt in the outer upper portion of the orbit, the eyeball being displaced downward a distance equal to the diameter of the cornea. I did the operation as though I were going to perform a Kroenlein operation, made the regular incision, freed the periorbita, pushed the tumor and periorbita to the nasal side of the orbit, and removed the tumor without doing an osteoplastic resection. This simplifies the procedure, and it seems to me from this experience that it is advisable to attempt to remove the tumor when possible without an osteoplastic resection. If there is not enough room, the orbital wall can be resected at any time.

Dr. Michael Goldenburg, Chicago: Last year I had the opportunity to observe several orbital tumors, and my procedure has been somewhat varied, largely depending on the location of the tumor. In only one of these cases did I approach it through a Kroenlein operation, and I regret that it was not as successful as other procedures I could have adopted. For example, in a tumor in the region of the orbital plate of the ethmoid, a Killian incision through the eyebrow and down the nose will give an approach into the orbit that is quite adequate, and the ease with which one can strip the periosteum and push aside the orbital contents is quite remarkable. I have a woman now under observation whose tumor was located in the outer part of the orbit, apparently adherent to the roof. I made an incision through the eyebrow and got an excellent approach, and had no difficulty at all in getting at the tumor and removing it easily. In the one Kroenlein operation that I did, I was unfortunate enough to tear the periosteum in pushing aside the bone flap, and of course in a week or ten days it started to necrose. This osteoplastic work was done by a good general surgeon. I am inclined to think that most of our intra-orbital tumors can be approached without a Kroenlein operation, and should be used only as a last resort.

Dr. Walter S. Franklin, San Francisco: As to the question of what therapy is proper to employ in these cases, working in conjunction with the department on dermatology of the University of California, I have had a number of cases; and while this is a little premature, in view of some of the papers to follow, yet where radium of sufficient dosage was used over large tumors at the inner or outer canthus of the eye, the amount of matting of the tissue and destruction was such that it cannot compare with the results from the Kroen-

lein operation. Occasionally with the use of radium in lymphangioma which extends back almost to the orbital apex, one gets a matting altogether over the external and internal muscle, and one does not get as good results as with the Kroenlein operation. I have done the Kroenlein operation fifteen times. One gets a beautiful exposure, one sees exactly what one is doing, and one gets no limitation of motion and practically no scar. I am in favor of a complete opening and surgical dissection of tumors of this type. In this particular case an attempt was made first to dissect it out through a conjunctival incision, but without success. The pathology of the case was really such that it should be called lymphangiectasis instead of lymphangioma. It was a case of dilated lymph spaces lined with epithelium, with a few calcified bodies within it. But as all the cases were reported as lymphangioma and not lymphangiectasis, I reported this as lymphangioma.

## SOME OBSERVATIONS ON USE OF ROENTGEN RAY IN DIAGNOSIS OF PERICARDITIS *

GEORGE W. HOLMES, M.D.
BOSTON

In January, 1920, I [1] published the results of some experiments carried on during that year at the Massachusetts General Hospital to determine the character of the changes taking place in the heart shadow when fluid accumulates within the pericardial sac. I also discussed the roentgen-ray findings in pericarditis as described in the literature, and reported the results obtained in our clinic by the use of roentgen rays in this disease up to that date.

I shall review briefly the results of our previous studies with the technic used to obtain the data that we believe essential, before giving an opinion as to the presence or absence of pericarditis, and report the results obtained with this technic during the last four years.

The experimental work done consisted of studies made on fresh hearts suspended in mediums of varying specific gravity, the lightest being air and the heaviest being salt solution with a specific gravity of 1.036. The heart was visible as a shadow of increased density until the specific gravity surrounding the medium reached 1.000, at which time it disappeared, and again became visible as a shadow of diminished density when the specific gravity reached 1.036. It will be noted that the shadow of the heart itself was not visible when the density of the medium corresponded to that of the pericardial effusions. These experiments, with a careful study of the cases examined and those reported in the literature, seem to prove that it is not possible to visualize the heart within a fluid-filled pericardium, and that, in cases in which the heart seems to be visible, it is probable that the fluid is in the mediastinum and not in the pericardial sac.

A second group of experiments consisted in the injection of the pericardium in the cadaver. This confirmed the work of Morris and Bader [2] and others, who have found that the earliest changes in the shape of the heart shadow are seen in the region of the sinus at the base of the heart and along the posterior border. In the anteroposterior view of the shadow, there is a widening of the supracardiac area and obliteration of the normal curve of the left auricle with the injection of about 200 c.c. Amounts of fluid less than this produced no appreciable change. As the amount of fluid increases, the change in shape of the heart shadow becomes general.

The clinical data were obtained from the records of sixty cases at the Massachusetts General Hospital which were diagnosed as probable pericarditis. From this material, and a review of the literature, it was concluded that the roentgenographic findings in their order of importance in pericarditis with effusion are: enlargement of the heart shadow; abnormal shape of the heart shadow; change of shape with the change of position of the patient; obliteration of the normal outline of the various chambers of the heart; changes in the shape of the angle formed by the posterior border of the heart, the diaphragm and the spine, and faint or absent pulsations.

Fig. 1.—Outline of cardiac shadow, and division of the various chambers in the normal heart.

The technic consisted of a fluoroscopic study of the heart with the patient in the upright position, the screen in front, and the tube at a distance of about 30 inches behind. This examination included a careful observation of the respiratory excursion of the heart and of the pulsations of the various chambers. A tracing was made of the outline of the heart during quiet breathing, and during forced expiration and inspiration. In addition to the fluoroscopic study, a plate was taken at a target-screen distance of 7 feet, with the patient seated and the plate in front and the tube behind. Care was taken to have the patient erect, not tilted forward, and the exposure was made during quiet breathing. In those cases which showed signs suggesting fluid, a plate was also made with the patient prone for comparison.

### REPORT OF THIRTY-SIX CASES EXAMINED DURING THE LAST FOUR YEARS

During the last four years, we have examined 2,950 patients for possible disease of the heart, using the

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Holmes, G. W.: The Radiographic Findings in Pericarditis with Effusion, Am. J. Roentgenol. 7: 7-15 (Jan.) 1920.

2. Morris, R. S., and Bader, E. R.: A Comparison of the Percussion and Roentgen-Ray Findings After Injection of the Pericardium, J. A. M. A. 69: 450-454 (Aug. 11) 1917.

technic described, and have found roentgen-ray evidence of disease of the pericardium in thirty-six. As pericarditis is a relatively infrequent disease as compared with valvular lesions, this number is within the field of probability. Of these thirty-six cases, eight were proved to have fluid within the pericardium by puncture or necropsy. In thirteen additional cases, the clinical findings and subsequent history confirmed the conclusion made from the roentgen-ray examination. In the remaining fifteen cases, the roentgen-ray findings were not confirmed.

A review of the hospital records covering the same period of time failed to show any case in which a diagnosis of pericarditis was made when the roentgen-ray examination was negative, and only one case in which this diagnosis was made without confirmatory roentgen-ray findings. From these data, it would seem that the roentgen-ray examination is of considerable value in making a positive diagnosis of pericarditis, and that negative roentgen-ray findings make a negative diagnosis probable.

Fig. 2.—A case with a fairly large amount of fluid in the pericardium; enlargement of the heart shadow, especially to the right, giving it the "water bottle" appearance; increase in the supracardiac dulness; obliteration of the various chambers; acute cardiohepatic angle.

A more detailed study of the findings in the eight proved cases showed the heart shadow to be enlarged and of the characteristic shape in every case, and the pulsations of the various chambers could not be differentiated. Visible general pulsations were equally divided in this group: present in half and absent in half.

In all cases examined, in both the prone and the upright positions, there was a change in shape of the heart shadow conforming to the position of the patient.

Evidence of limitation of the respiratory excursion of the heart is of most value in adhesive pericarditis. There were no proved cases of this disease in this series.

### VALUE OF VARIOUS FINDINGS

The statistical data obtained from the present group of cases seem to bear out the conclusions drawn from the previous study, and to give added value to the presence or absence of obliteration of the normal heart outline.

In the normal heart, it is usually possible under fluoroscopic observation to differentiate the pulsations of the auricle from those of the ventricle. In the presence of pericarditis, and particularly if fluid is present, the pulsation becomes diffuse over the entire cardiac area, and it is impossible to distinguish the auricular beat from that of the ventricle. While the making of this observation requires considerable experience to be accurate, it apparently does not occur in any other cardiac condition, and when found must be considered as almost pathognomonic. This sign is especially valuable, as it is present in adhesive pericarditis as well as in pericarditis with effusion. The increase of the supracardiac dulness, and the straightening out of the normal curve of the upper portion of the left border, are also of great value in detecting small effusion. The presence or absence of pulsation over the cardiac area is not of great value. It is likely to be present unless the amount of fluid is very large, as the heart beat is transmitted through the fluid; it is also present in pericarditis with adhesions. Pulsation may become invisible in dilated or very rapid hearts. The change of shape with change of position is not found in any other cardiac condition. In the prone position, the shadow of the supracardiac dulness increases, and the shape tends toward that of a rectangle. In the upright, the region of the base and great vessels diminishes in size, and there is an increase in the transverse diameter of the shadow above the diaphragm, giving the heart the "water bottle" shape. This observation cannot be obtained in all cases, as it is sometimes impossible for the patient to assume the prone position.

We have found that obliteration or change in shape of the cardiohepatic angle (Rotch's sign) is more likely to occur in pericarditis with adhesions than with fluid, and that it is not a reliable finding in any case. This observation has been confirmed by other writers.

From an anatomic point of view, one would not expect the pericardium to be widened at its point of attachment by the accumulation of fluid within the sac. The bulge should appear above the attachment, and produce a narrow and more acute angle rather than an obtuse one, and this apparently is what takes place. The observation is a difficult one to make because the area is obscured frequently by a high position of the diaphragm.

Other findings, such as retraction of the diaphragm with the heart beat, and fixation of the heart within the chest as shown by failure to be displaced when the patient is turned from side to side, are subject to so much error in observation by the roentgen ray that we have found them of little value.

Obliteration of the posterior cardiac angle described by Williams [3] is a valuable sign when the amount of fluid is small, and is best observed with the patient sitting or standing, directing the roentgen rays through the chest from side to side so that a direct lateral view is obtained. With a large amount of fluid, the increased size of the heart shadow obscures the field.

With the combined method of fluoroscopy and teleroentgenography, one should be able to make a diagnosis of pericarditis in a fair percentage of the cases examined. These variations from the normal are looked for:

1. There should be enlargement of the heart shadow, with a tendency to assume the triangular or "water bottle" shape.

3. Williams, Francis: The Roentgen Rays in Medicine and Surgery, Ed. 3, New York, The Macmillan Company, 1903

2. There should be obliteration of the normal cardiac outline, with inability to distinguish the pulsations of the auricles from those of the ventricles.

3. When fluid is present, there should be change in shape with change of position.

4. In the presence of adhesions, the respiratory movements of the heart may be limited, and its outline irregular.

## ABSTRACT OF DISCUSSION

DR. PAUL DUDLEY WHITE, Boston: I agree with Dr. Holmes that the most important roentgen-ray evidence of pericardial effusion is the increase in the size of the shadow. Sudden increase in the heart shadow or the large size of the shadow in the presence of infection, without valve lesions or hypertension to account for the increase in size, almost always indicates pericardial effusion. It has been my experience that so-called acute dilatation of the heart sometimes turns out to be pericardial effusion, though usually it is acute dilatation of the heart. Secondly, the shape of the shadow is important, too, with its change of position between the

Fig. 3.—Same case as in Figure 2 after the pericardium has been opened and the fluid removed. The drainage catheter is still in position. The shape of the heart has returned to normal.

erect and the recumbent position. The fluid in the semi-recumbent position is very apt to accumulate around the vessels, and I have seen a diagnosis of aneurysm of the aorta made when the increase of the shadow was due to effusion around the aorta. The third point is difficult to diagnose either by physical examination or by the roentgen ray. Help has come to us in making the diagnosis of mediastinitis from the electrocardiogram. As shown electrocardiographically, in changing from the left to the right lateral position in the presence of pericardial adhesions involving the mediastinum, there is practically no shift in the electrical axis.

DR. H. J. ULLMANN, Santa Barbara, Calif.: Does that change in the electrocardiogram occur in any condition except adhesive pericarditis?

DR. PAUL D. WHITE, Boston: I have used it in an experimental way in pericardial adhesions.

DR. GEORGE W. HOLMES, Boston: I should also like to call attention again to the statistical data presented. I realize that it is very difficult to get any accurate statistics of this kind, and probably the showing is rather better than it should be. I have proved nothing very definitely, particularly in relation to pericardial effusion. I should like to mention the value of the respiratory study of the heart during adhesive pericarditis. In the lateral view, particularly if the mediastinum is involved, the heart may rise with the chest wall instead of dropping with the diaphragm during forced breathing. This is a very definite and easily interpreted sign.

# UNRECOGNIZED CLINICAL IMPORTANCE OF ANAL PRURITUS*

J. F. MONTAGUE, M.D.
NEW YORK

The clinical importance of anal pruritus consists in the recognition that itching is a perception of abnormal afferent impulses, whose intensities are below that necessary to evoke the perception of pain.

Working on this basis, we are led to the realization that itching, like pain, merits more than passing consideration and palliative treatment. It is the expression of an abnormal state of being and deserves as thorough an investigation as does its related symptom, pain. Medical opinion is unanimous in its disapproval of the drugging of a patient to quiet pain, when such palliation is not accompanied by a vigorous effort to ascertain the cause or causes at work in its production. Such a procedure is unscientific, and it is therefore rightfully condemned. Yet medical men in general seem quite indifferent as to the underlying cause of pruritus and are content to attempt its palliation by purely empiric means. It is to this discrepancy that I wish to draw attention.

Clinical observations and frequent reports in medical literature record the association, in many instances, of chronic visceral disease with a localized pruritus, such as anal pruritus, vulvar pruritus or scrotal pruritus. The explanation of these is to be found on the basis, in many instances, of a misreference of the sensation of itching. The exact neural mechanism involved is a transference of afferent impulses in the posterior spinal ganglions and spinal cord from the visceral afferent nerves to the somatic afferent nerves. Dogiel, Langley and Gaskell have long considered this synaptic relation as practically proved. Clinical observation confirms its occurrence. It is therefore entirely logical to conclude that in a hitherto unsuspected, but nevertheless definite, percentage of cases of localized pruritus, such as anal pruritus, a misreference of the itching occurs in a manner precisely similar to the misreference of pain. The latter theory has now been widely, if not universally, accepted as true. Anal pruritus is just as truly a misreferred sensation, and the fact that it indicates a pathologic condition elsewhere than in the area of apparent disturbance comprises its outstanding clinical importance. As a symptom, therefore, of visceral disease or derangement, its value cannot be overestimated; hence, I urge its recognition as such.

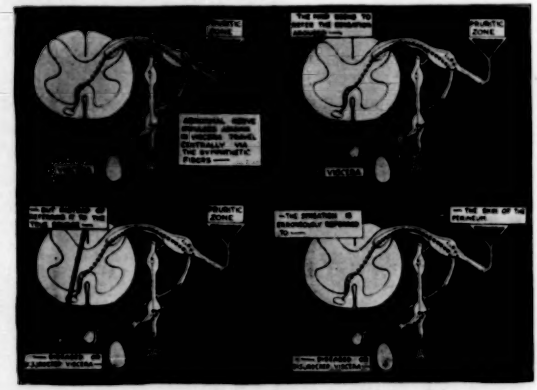
When viewed in this light, we avail ourselves of a hitherto overlooked early manifestation of visceral disease. Because of the delicacy of perception represented, pruritus occurs during the very early stages of visceral disease, and thus precedes, in many cases, actual pain. In slowly incipient or very chronic con-

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

ditions, pruritus may actually supplant pain as a symptomatic expression.

The obvious value of localized pruritus, therefore, lies in the fact that it is an early symptomatic warning of visceral disease. To those who recognize it as such, its clinical importance is apparent. It calls for a complete physical examination, with particular inspection of the pelvic and abdominal viscera. An examination will lead to the discovery of a pathologic condition in its very early stages. Such a finding is of incalculable value, because it makes treatment more certain of success, and, indeed, makes successful treatment possible in some cases in which a delay would deny it.

The foregoing is of particular significance when considered in relation with carcinoma of either the pelvic or the abdominal organs. In this instance, an early diagnosis is of utmost value, and any aid to its establishment ought to be utilized. If every case of anal pruritus were subjected to a sigmoidoscopic examination, carcinoma of the rectum would be seen more often in a truly operable state, rather than in the inoperable form in which it is now generally brought to the rectal surgeon's attention. I have seen many cases of early carcinoma with an associated anal pruritus, but the fully developed growth does not cause its production so often. The point I wish to stress is not that one can make an instant and complete diagnosis of carcinoma of the rectum or colon from the mere presence of anal pruritus, but rather that the presence of such a symptom broadly indicates visceral pathologic changes. A thorough search for this will reveal a carcinomatous condition, should it be present.



Diagrammatic representation of anal pruritus (indirect pruritus ani).

Incidentally, by adopting my view of the significance of this condition, the patient will not be subjected to much well intended but useless, if not actually harmful, local therapeutics, while the discovery of the basic causes are neglected. Not only is it true that the permanent relief of anal pruritus can come only through the removal of the cause, but it is equally true that full justice cannot be done the patient if we palliate his natural symptom and leave untouched the source of his trouble—pathologic changes in the viscera.

As notable examples of the point I have just set forth, the following abstracts of case histories are offered:

### REPORT OF CASES

Case 1.—E. D., a married woman, aged 42, who had never been ill at any time previous during her life, presented herself for examination as to the cause of very troublesome itching around the anus and extending slightly forward onto the labia. This itching had first become noticeable six or seven months before and had grown progressively more intense. Her history was negative as to previous illnesses, nor did she have any symptoms other than itching. The menses continued apparently normal; the bowel function was normal; the digestion good; and, in other respects, her statements were negative. Examination showed apparently normal skin throughout the entire perianal region; the sigmoid colon and rectum were normal. Bimanual examination of the pelvic organs, however, showed the presence of a large mass in the region of the right tube. The conclusion that this was a slow growing tumor, and that it was the cause of the pruritus, was reached. A gynecologist, called in consultation, advised a laparotomy. On operation, two large, unilocular ovarian cysts were found and removed from the right ovary. An uneventful recovery with complete cessation of pruritus resulted, nor has it recurred in the eighteen months since.

Case 2.—C. B., a widower, aged 41, who stated that he had had no previous venereal or other illness, except an attack of influenza six years before, came for examination as to the cause of an intense perianal itching for the past year, which prevented his enjoying normal sleep. He stated that, outside of the grip, this was the only time he had ever been ill. He did not use alcohol or tobacco, and asserted that he had not had sexual intercourse for the past two years, since the death of his wife. The only significant fact in his history was that he had nocturia. Examination of the anal skin showed practically normal skin; the sigmoid colon and rectum were both normal. Abdominal palpation elicited nothing abnormal. Digital examination of the prostate revealed a considerably enlarged prostate and distinctly palpable seminal vesicles. Consultation with a genito-urinary surgeon resulted in his treatment of the condition by prostatic and vesicular massage. Complete relief of pruritus resulted with no recurrence eight months to date. Treatment is being continued.

Case 3.—F. F., a man, aged 34, married, complained of anal itching, particularly severe at night. Until two years before he had never had any illness, other than childhood diseases. Two years before I saw him, he first noticed this itching. It had been uniformly intense up to the present time. Sigmoidoscopic examination showed the presence of a moderate sized, firm, nodular mass in the wall of the intestine at the rectosigmoid junction. Biopsy showed it to be an adenocarcinomatous growth. A perineal excision was performed.

### CONCLUSIONS

In all three of the cases referred to above it will be noted that:

1. No local medication was employed.
2. Local medication alone would have been useless.
3. The detection and correction of visceral disease removed the pruritus.
4. A grave injustice to the patient would have resulted if the itching had been treated solely by means of local medication, and if the cause of the itching—diseased or disordered viscera—had not been found and removed.

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## ABSTRACT OF DISCUSSION

DR. RALPH W. JACKSON, Fall River, Mass.: The clinical picture in a case of so-called "itching piles" is a pitiful one. Often the patient is a nervous wreck from the insomnia caused by the itching. Probably he has been seeking relief from his druggist, his physician—from anybody and everybody. Then, too, the proctologist has not been able to give reasonable assurance of cure, but has given relief only at the price of continuous and annoying local therapy, and with the certainty of recurrence of the itching should the treatment be neglected in any way. This unsatisfactory situation is evidenced by the varied and conflicting views on etiology and treatment advanced by proctologists in the literature. Dr. Montague seems to have been able to reconcile all the existing knowledge of the disease and base thereon a rational therapy. Most of the cases we see are well advanced and have definite pathologic changes in the affected parts, undoubtedly the result of the trauma of scratching and consequent infection; but now and then we do see them early when no such changes are apparent. If Montague is right, as I believe he is, in his explanation of these early cases, on the basis of misreference of sensation from some diseased viscus, we then have the unexplained factor we have been looking for, and the treatment resolves itself into a trilogy; viz., correction of the primary abnormal condition, blocking of the nerve impulses, and treatment, medical and surgical, of the secondary local changes.

DR. L. J. HIRSCHMAN, Detroit: The question of itching of the anus is a vast one. Not one of us is satisfied either as to the etiology or as to the treatment. I have no doubt that many patients with this disease suffer from referred pain as well as from other sensations, but we must not forget that the reporting of a few cases of visceral disease, plus itching in the perineum and anus, does not go very far in really helping us to a definite position in the etiology. The gynecologic records show that thousands of tubal, ovarian and uterine diseases exist without any itching, and the gastro-enterologist will show us many cases of derangements of digestion in people who have no itching. On the other hand, we have patients coming to us with itching which is definitely localized, due either to direct local infection or to focal infection, and many times the source of the focus is in the neighborhood of the perineum. Anal cryptitis, as well as anal papillitis, is caused by the irritation of an aqueous discharge, but these cases are just as truly sources of focal infection as diseased tonsils or teeth. The author is to be commended for the work he is doing; but while investigation of the cause of the trouble is going on, we should not forget that we must treat the patient, who is suffering from one of the most distressing conditions. Many cases of itching of the anus and perineum may have started from the misreference of sensation, but the moment the patient rubs and scratches the epithelium surrounding the anus it becomes infected, when a vicious circle is established, and the more he itches, the more he scratches, and the more he scratches, the more he itches. So while Dr. Montague is investigating the etiology of this condition we must take measures to relieve the itching. If this paper has not done anything more than show us that we have to look further for the primary etiology and emphasize that the mere fact the patient has hemorrhoids does not mean that the itching comes from that cause, we have accomplished a great deal.

DR. J. F. MONTAGUE, New York: It is perfectly obvious that treatment must be left out of consideration in a paper of this nature. So far as this type of patient is concerned, it is necessary that we understand the condition we are trying to treat. I wish to emphasize the fact, referred to in the paper, that there are cases in which this is a symptom of visceral disease. Starting from that sensation one can easily get a local process of dermatitis, producing contraction of the muscle and a direct irritation of the nerve fibers. One can also get, if continued rubbing and scratching occur, an infective dermatitis caused by *Staphylococcus albus* or the colon bacillus, which will increase the itching simply from cellular irritation. That is the direct form. However, the matter I wish particularly to emphasize here is what I have called indirect pruritus. It is not reflex; there is no such thing as indirect pruritus. Dr. Hirschman calls attention to the fact that only a few cases of visceral disease associated with pruritus have been reported. The medical literature is full of cases which have been noted in relation to pruritus of the perineum with chronic visceral disease. Practically every chronic disease of the abdominal organs has had cases reported in the medical literature in which this connection has been ascertained. Therefore, I do not think that we can maintain that only just a few of these cases have been reported. I have mentioned only a few, but I think that all will recognize this factor in a number of cases and will hunt for the cause. Of course, it is easy to understand the theoretical aspects of the disease, but so far as treatment is concerned, this must be immediate. One stands a better chance of ultimate success if he recognizes all the factors connected with the condition.

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# DISPLACEMENT OF UPPER EPIPHYSIS OF FEMUR TREATED BY OPEN REDUCTION *

PHILIP D. WILSON, M.D.
BOSTON

Since December, 1921, and up to Jan. 1, 1924, seven cases of displacement of the capital epiphysis of the femur have been treated at the Massachusetts General Hospital by open operative reduction. So little is known of the etiology and pathology of this condition that it seems desirable to report these cases and the operative findings, and also to describe the operative procedure that was employed, together with the results obtained.

In all seven cases the lesion was of the type to which the term "slipping epiphysis" has been applied. The trauma responsible for the injury was of a mild character, and, in every case except one, had been preceded for a variable period by symptoms referred to the hip. Usually, there was a history of a slip or fall, followed by transient pain and lameness, or of intermittent pain brought about by repeated slight traumas. Then, after several weeks or months there was a trivial accident followed by a complete giving way of the hip. In one patient, this occurred while walking up hill; in a second, while carrying a pail of water; in a third it followed a misstep, in which the weight was rather suddenly thrown on the lame hip. One patient had slipped and wrenched the leg, while another fell.

A striking feature in the histories was the seemingly subacute nature of the symptoms accompanying the injury. Five of the patients had suffered a complete separation of the epiphysis, while two had only partial displacements. Of the former, one continued to limp back and forth to school, although he was conscious of a clicking sensation in the hip when he walked; a second was able to bear weight on the hip after a week or two of home treatment. Two others were able to walk about with crutches, while the fifth, being unable to walk, was brought immediately to the hospital. In the case of the two patients with partial displacement, there had been no interruption of weight bearing at any time, and it was only the increasing functional impairment that finally

* From the Fracture Service, Massachusetts General Hospital.
* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.
* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

brought them to the hospital. In only one case had the real nature of the condition been recognized by the attending physician.

### OPERATIVE TREATMENT

The operations fall into two groups: those performed in cases in which the displacement was of recent origin, and those in the late cases, in which malunion was present. In the first group, there were four cases; in the second, three.

*Recent Displacement.*—In all four of these cases the roentgenograms showed complete separation and displacement of the epiphysis, which was rotated downward and backward in its relation to the femoral neck.

The first operation (Case 1) was performed, Dec. 22, 1921, after a preliminary attempt at closed reduction by the Whitman method with plaster fixation had proved unsuccessful. The hip was approached by the Smith-Petersen incision. The front of the capsule was exposed, and the joint opened by turning back a U-shaped flap with base attached to the anterior rim of the acetabulum. The cavity was filled with old blood and fibrin, which were evacuated. The separated fragments were clearly visible, the neck projecting anteriority, while the epiphysis, covered to its margin with articular cartilage, was rotated downward and backward behind the neck. Reduction was attempted by exerting traction on the leg, while the hip was abducted and internally rotated. This failed, apparently for lack of means to fix the head, which rotated with the femoral neck. A skid was then introduced between the fragments, and the epiphysis was pried forward, whereupon reposition was readily accomplished. Internal fixation was not required, the fragments being firmly held when the hip was placed in the Whitman position of full abduction and internal rotation. The capsular flap was replaced and sutured with chromic catgut, and the incision closed. Immobilization was secured by the application of a long plaster-of-Paris spica.

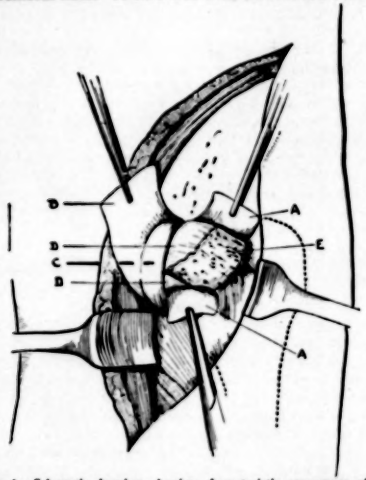


Fig. 1.—Schematic drawing, showing characteristic appearance of the head and neck of the femur at operation in an old case of epiphyseal displacement with malunion; *A*, synovial flaps reflected subperiosteally from the neck; *B*, capsular flap reflected medially to expose joint; *C*, capital epiphysis; *D*, fibrous and osteoid tissue filling defect; *E*, femoral neck.

The operative procedure in each of the other three cases of this group was similar to that described above. In Case 2, although a period of six weeks had elapsed since injury, the fragments were found quite loose, and the surfaces were covered with fibrous tissue, which had to be removed. Case 3 was also apparently a recent case, and operation was performed within three weeks of the last acute exacerbation of symptoms. However, the epiphysis was found adherent, in its displaced position, to the posterior surface of the femoral neck, but was readily freed with an osteotome, without the use of a mallet. In Case 4, the separation and displacement of the epiphysis had occurred without rupture of the overlying periosteum and synovia, and it was necessary to divide these structures before replacement could be obtained.

Fig. 2 (Case 5).—The patient, nine months after the operation. At the age of 13, he weighed 190 pounds (86 kg.), and showed considerable evidence of pituitary infantilism. Three other patients of the group were of this type.

The operative findings in all four cases confirmed the diagnosis of displacement of the epiphysis. The separated surfaces were not irregular, although they were slightly granular in appearance. They were grayish and not vascular. The appearance was not that of a fracture, but of a separation through cartilaginous layers. The periosteum and synovial reflections on the posterior surface of the neck were invariably intact, thus assuring a blood supply to the proximal fragment. The displacement was always of the same character as that described in Case 1.

*Old Displacement.*—In the three late cases, the operative procedure was, in general, similar to that employed in the recent cases, with the exception that it was necessary to separate the epiphysis at the seat of the malunion. In Case 5, the displacement was extreme and probably of two years' standing. There was solid union between the fragments. The joint cavity was opened as in the other cases by turning back a flap of capsule. The neck was continuous with the articular surface and covered smoothly with synovia. The head was, however, sharply angulated with the neck and faced backward and downward. The synovia, with underlying periosteum, was incised in the axis of the neck and elevated from the bone in two flaps, superiorly and inferiorly (Fig. 1). The space between the anterior margins of the fragments, caused by the forward projection of the neck, was filled in smoothly with fibrous tissue. This was removed with a knife, causing the seat of malunion to be well defined. A wide, doubly curved osteotome was introduced between the fragments and directed backward, outward and downward. With a few blows of the mallet, the fragments were separated, care being taken not to injure the periosteal and synovial covering on the posterior surface of the neck. Bleeding was noted from the cut surface of the proximal fragment. The healed portion of the epiphyseal surface of the neck was freshened, and the head pried forward and upward into the normal position. Reduction was maintained by

abduction and internal rotation of the hip. The periosteal flaps fell together without suturing; the capsular flap was replaced and the wound closed. Fixation was obtained as in the other cases by means of plaster of Paris.

In Cases 6 and 7, the displacement was incomplete, and, although there was considerable functional impairment, operation would not have been advised if the results in the preceding cases had not seemed so good. The same procedure was employed as in Case 5, and the operative findings were likewise similar except for the lesser amount of deformity.

### POSTOPERATIVE TREATMENT

The after-treatment has been the same in all cases. Immobilization in plaster has been maintained for a period of from ten to twelve weeks. Physiotherapeutic measures, such as heat, massage and active exercises, have then been inaugurated. At the end of from one to two weeks a Thomas caliper brace has been adjusted, and weight bearing permitted with the aid of crutches and a high sole on the unaffected leg. The crutches have been dispensed with as soon as possible and activity encouraged. Full weight bearing without the protection of the brace has not been permitted before the end of from six to nine months after the operation.

### OUTCOME

All the cases have been followed, and all but one have been personally examined within the last two months (April 1 to June 1, 1924). The wounds have healed without infection, and there have been no complications. Union between the epiphysis and femoral neck has occurred rapidly and uneventfully in every case. The

Fig. 3.—The end-result of failure to correct epiphyseal displacement. This patient gave a typical history of having sustained a separation of the epiphysis at the age of 16. Now, at 58, he has a stiff and painful hip and has been unable to work for three years. The deformity, the thinning of the cartilage and the evidence of osteoarthritis can be seen.

results, considered from the standpoint of function, are excellent. None of the patients regard the injured leg as in any way abnormal and, with the exception of one who is still wearing his caliper brace, but who has an almost normal mobility, all are able to participate in sports and games. Late examination of the hip showed practically normal range of mobility as compared with the uninjured hip, except for the movement of flexion. This is limited in every case at 90 degrees with the exception of one (Case 5), in which at the end of ten months it is still limited at 45 degrees, but improving. Shortening is present to a slight extent in every case; one-fourth inch in two; one-half inch in four, and 1 inch in one. This is evidently the result of a dis-

Fig. 4 (Case 1).—Characteristic deformity, with the epiphysis rotated downward and backward.

turbance of epiphyseal growth at the upper end of the femur, as in four of the cases shortening was absent when the patient left the hospital. That it is the effect of the injury, rather than of the operation is shown by the fact that it is greatest in those cases in which the only procedure was that of reduction. Similar shortening may be found in cases in which operation was not performed. Further increase in shortening is scarcely to be expected as the contribution of the upper epiphysis to the growth of the femur is less than that of the lower, and, in any case, these patients have nearly reached their limit of growth.

In a study of this condition it is apparent that there are two chief problems: first, that of etiology, and, second, that of treatment.

### ETIOLOGY

Concerning etiology, there is much speculation but little real knowledge. On the one hand are those who regard the condition as purely traumatic in origin; on the other, there are those who consider it the result of a pathologic process affecting the epiphysis. Kocher [1] suggested a localized osteomalacia as the etiologic factor; Froelich,[2] an attenuated infection. Some have thought it the result of late rickets; others, the result of endocrine disturbance.

Our seven cases have been studied with this point in view. The patients varied in age from 13 to 17 years. With one exception, they were all boys. Four of the patients were excessively fat, one weighing 190 pounds (86 kg.) at the age of 13 (Fig. 2). Three of these were boys with feminine habitus, well marked mammary development, in whom the appearance of the sexual characteristics was retarded. The fourth was a girl with tapering fingers and evidence of infantilism. The

1. Kocher: Adolescent Coxa Vara, 1894.
2. Froelich: Paris méd. 10: 430 (Dec. 4) 1920.

appearance of these patients strongly suggested abnormality in growth due to hypofunction of the pituitary. Roentgenograms of the skull showed that the sella turcica was normal in size, and that the metabolic rate was normal in the two patients studied. The other three patients were, however, of different types. Two were

Fig. 5 (Case 1).—Appearance of the deformity twenty-three months after operation. The epiphyseal junction is still evident, and indicates continued growth.

tall and slender, evidently growing rapidly, while the third was neither fat nor thin, and his height was normal for his age.

Complete roentgenologic studies of the entire skeleton were made in four cases, but they failed to reveal any bony deformities or epiphyseal abnormalities such as would be expected in late rickets. Also, as excluding the latter, the calcium and inorganic phosphorus content of the blood was determined in three cases and found to be either normal or high. In three cases, a wedge of tissue passing through the epiphyseal junction was excised for study. Histologic examination, however, proved disappointing, as the picture was chiefly one of callous formation, probably stimulated by the injury.

Experiments by Ollier,[3] Poland[4] and others have shown that the periosteum is the chief sustaining bond between the epiphysis and diaphysis. Vogt and Kirmisson[5] have suggested that the reason displacement occurs more readily in adolescents than in infants is that, in the former, there are two bony surfaces glued together by a thin layer of cartilage, while in the latter the epiphysis is a supple, cartilaginous mass strongly bound by thick periosteum. In the case of the hip, the anatomic relation of the epiphysis to the femoral neck is potentially weak. Elmslie[6] states that, with the epiphysis in normal position, the pressure of the body weight tends to hold it in place; with slight displacement, however, a shearing strain is exerted, and there is a tendency to further displacement.

That endocrine disturbance, probably of the pituitary, plays a part seems evident from the frequency with which the accident is encountered in fat children showing evidence of infantalism. It is logical to believe that epiphyseal growth would be affected in any process causing general growth disturbance such as these patients show. In the opposite type of patient, the tall, slender, rapidly growing boy, it is also easy to understand that the rapid proliferation of cells in the conjugal cartilage would tend to weaken the epiphyseal junction, unless the process of ossification was correspondingly accelerated. An epiphysis, more vertically placed than usual, due to anatomic variation, or excessive weight which overloads the epiphyseal junction, or the greater leverage brought to bear by unusually long bones, would constitute additional etiologic factors. Analysis of the histories of these patients would lead one to conclude that the epiphysis is first loosened by trauma, but that it is not displaced, the periosteal bond remaining intact. Displacement occurs at a later date, as the result of continued use and the shearing strain of the body weight. Additional trauma may intervene to hasten this result, but is not essential in its production.

### TREATMENT

It is obvious that the first essential to treatment is early diagnosis. This should not be difficult, because of the characteristic history, the usual occurrence of the condition at the age of puberty, and the frequency with which it is encountered in abnormally fat children. Examination reveals slight shortening, and the thigh is externally rotated. The movements of abduction and internal rotation are markedly limited. The roentgenologic findings are characteristic.

If the patient is seen early, closed reduction by the Whitman method should be attempted. If successful, this should be followed by fixation in plaster for a period of from two to three months, and protected weight bearing until the end of six months. However, experience with the group of cases here reported leads one to the conclusion that operative intervention will frequently be required in order to secure the satisfactory correction of deformity. Closed reduction failed in one case that came under treatment soon after injury. In the majority of the other cases, the findings at the time of operation

Fig 6 (Case 3).—The typical deformity as presented on admission. In this case, at operation, the fragments were found ununited seven months after the injury.

3. Ollier: Rev. de chir. 1:785, 1881.
4. Poland, J.: Traumatic Separation of the Epiphysis, London, 1898.
5. Kirmisson: Presse méd., 1912, p. 657.
6. Elmslie, R. C.: Lancet 1:410 (Feb. 16) 1907.

indicated that it could not have succeeded even if it had been tried. When dealing with an intra-articular injury, one should not be content with anything less than complete correction of deformity. Otherwise, a condition of joint strain and irritation is brought about, which sooner or later is sure to culminate in a traumatic

Fig. 7 (Case 3).—Appearance of deformity nineteen months after operation. There is complete correction, but the epiphyseal junction is obliterated, indicating cessation of growth.

arthritis. The roentgenogram of such a condition is shown in Figure 3, the result of an old, uncorrected displacement of the upper femoral epiphysis. At the age of 58, this patient had been incapacitated for three years on account of pain in the hip.

An end-result study of a group of cases in which the patients had been treated by closed reduction has been recently made by Dr. Albert Key and is soon to be published. This survey indicates that serious shortening and marked impairment of function are all too common findings. A study of the group of cases recorded here, small though it is, seems to justify the statement that open reduction, when it is properly performed, is a safe procedure and one capable of improving function when closed methods fail.

## REPORT OF CASES

CASE 1.—F. E. R., a boy, aged 17, admitted, Dec. 1, 1921, had first felt pain in the left hip six months before, when high jumping. The pain was only momentary, and he was able to continue his athletic activities. Two weeks before admission, he had run to catch a street car, and had boarded it when it was moving. In doing this, he wrenched the hip and immediately felt severe pain, which persisted, although it decreased in severity. He was able to walk, although he was lame. The day before, he had slipped and fallen, doubling the left leg under him. He felt a snap in the left hip and there was great pain; he was unable to rise, and had to be carried home.

The patient was tall and slender. The left leg was externally rotated, and all movements of the hip were painful. The trochanter was prominent and lay above Nélaton's line. There was a shortening of one-half inch. The roentgenogram (Fig. 4) showed the characteristic deformity.

December 3, under ether anesthesia, closed reduction was attempted, following the Whitman procedure, and a long plaster-of-Paris spica was applied. Roentgenograms taken through the plaster showed an unsatisfactory position. Open reduction was performed, December 22, and good correction was obtained. The plaster was removed, March 15, 1922, and a Thomas caliper brace was applied; this was worn until July 1.

Nov. 12, 1923, normal use, without pain or limp, had been restored. All movements were normal with the exception of flexion, which was limited at a point slightly beyond a right angle. There was a one-half inch shortening (Fig. 5).

CASE 3.—*History.*—T. K., a girl, aged 13, admitted, Dec. 4, 1922, about ten or twelve months before had had several falls while learning to skate, but she had never hurt herself badly. About one month after that she began to have slight pain in the right knee. This continued all summer, although it had never interfered with her ability to get about until about four weeks previous to admission. At that time, without any fall or trauma, the pain became worse and she came to the outpatient department. She was advised to use crutches and have a roentgenogram taken. Two days later, before reporting for the roentgenographic examination, she took a misstep and put considerable weight on the right leg. This caused severe pain in the right knee, which was worse than ever. A local physician applied a plaster cast, which she wore three weeks without securing relief.

The girl was excessively fat, with tapering fingers and absence of pubic hair. Her skin was pasty. The hip was not obviously swollen, and the right leg was externally rotated. No tenderness was present. All movements of the hip were limited with the exception of flexion, which was possible to 45 degrees. There was a shortening of one-half inch. A roentgenogram showed complete separation and posterior displacement of the capital epiphysis (Fig. 6).

Open reduction and plaster fixation were done, and good position was secured December 9. Feb. 24, 1923, the cast was removed. March 1, a caliper brace was applied, which was worn until October 5.

May 27, 1924, the patient was very fat, weighing 169 pounds (77 kg.) and her height was 5 feet, 3 inches (160 cm.). She was not yet menstruating. She walked without a limp,

Fig. 8 (Case 4).—Complete displacement, with characteristic deformity.

and stated that she did everything the other girls did. The hip showed a nearly normal range of movement with the exception of flexion, which was limited at 90 degrees. A one-half inch shortening was present (Fig. 7).

CASE 4.—J. K., a boy, aged 15, admitted, Dec. 24, 1922, about six weeks before admission while he played football, had noticed pain in the right hip after being at the bottom of a "pile up." This pain continued and was made worse when weight was borne on the leg, with the result that he

walked with a limp. It did not improve. Five days before, while he was walking up hill, he suddenly lost the use of the right leg, and was unable to walk. He was helped home, where he was confined until his admission to the hospital.

The patient was of medium size, and very slender. He lay with the right leg externally rotated. The right hip was more prominent than the left, and there was tenderness when pressure was applied over the head of the femur. All movements were guarded and painful, although not acutely so. There was a shortening of 1½ inches, and the roentgenogram (Fig. 8) showed complete separation of the capital epiphysis, with displacement downward and backward.

December 28, open reduction and fixation in plaster of Paris were done. March 30, 1923, the cast was removed. April 17, a caliper brace was applied, which was discontinued, June 15.

May 27, 1924, the patient was well, and said that he did everything without disability. There was a normal range of movement in the right hip except for flexion, which was limited at 90 degrees. There was a shortening of one-half inch (Fig. 9).

Case 5.—H. S., a boy, aged 13, admitted, May 4, 1923, while wrestling, two years before had felt a twinge of pain in the left hip. There had been no further trouble until three days later, when he was carrying a pail of water. Then, the leg suddenly gave way under him. He stayed home in bed for three or four weeks and then began getting about with crutches. He gradually improved, although he walked with a limp. About one year before admission, he sustained a fall, which aggravated his symptoms. For the last nine months the condition had remained stationary.

The patient was enormously fat; he was tall and weighed 190 pounds (86 kg.). There was marked mammary development and his appearance was feminine. The genitals were infantile. He walked with marked lameness of the left leg. The hip was prominent and the trochanter above Nélaton's line. There was shortening of 1½ inches. Abduction was limited at 15 degrees; flexion, at 30 degrees, and internal rotation was possible to the midposition only.

Fig. 9 (Case 4).—The deformity (seventeen months after operation) is well corrected, although the epiphysis still occupies a slightly low position.

The roentgenologic examination showed an old displacement of the capital epiphysis, with marked deformity and malunion (Fig. 10).

May 16, Open reduction, and plaster fixation were done. August 17, the cast was removed, and August 20, a caliper brace was applied. Feb. 28, 1924, the caliper brace was discontinued.

April 10, 1924, the patient walked well with a slight limp, and was able to do everything. There was a shortening of one-half inch. Movements of the hip were normal, except flexion, which was limited at 45 degrees, and internal rotation, which was about 20 degrees less than it was on the opposite side (Fig. 11).

Fig. 10 (Case 5).—Complete displacement, with malunion of two years' standing.

## SUMMARY

In seven cases of epiphyseal displacement of the upper end of the femur, the injury was of the type known as "slipping epiphysis."

A study of these cases reveals the fact that abnormality of growth due to endocrine disturbance or to a rapid increase in height may play a part in weakening the epiphyseal junction. Trauma and mechanical factors, however, play an important part in the production of the injury.

These patients were treated by open operation, and the epiphysis was replaced. Three were old, malunited cases. There were no complications, and the end-results as regards both anatomic form and function have been very satisfactory.

It is urged that a more perfect standard of correction be adopted in these cases and that, when this cannot be obtained by closed methods, resort be made to the open method.

372 Marlborough Street.

## ABSTRACT OF DISCUSSION

Dr. W. R. Cubbins, Chicago: The one fundamental point I would emphasize is to have the leg abducted in such a manner that there is a distinct coxalgia and that the weight can be carried as direct as possible in the line of the neck. The good results obtained by Dr. Wilson are to a large extent due to the position in which he has replaced the epiphysis.

Dr. Willis C. Campbell, Memphis, Tenn.: Dr. Wilson has demonstrated that endocrine disturbance is undoubtedly a predisposing factor, though epiphyseal separation may rarely occur in normal individuals. From our records twenty-one cases were reviewed, showing three distinct types: (1) acute or early separation; (2) subacute, and (3) ancient. I have not employed open reduction in any of the acute cases, but have noted permanent limitation of internal rotation and

acute flexion in three or four cases, which was possibly due to incomplete approximation, although from the stereoscopic roentgenograms perfect reduction was apparent. As Dr. Wilson has shown, operative intervention is indicated in all cases in which complete approximation cannot be secured. I have operated in a number of subacute cases in which there was marked displacement of the epiphysis, with excellent results, though not complete restoration of normal function in all cases. In the third, or ancient cases, when solid bony union has occurred and the epiphysis is completely fused in malposition, I would doubt the wisdom of attempting reduction on account of the possibility of defective circulation in the proximal fragment. In this class, which we might term coxa vara, a subtrochanteric osteotomy is preferable. There were two cases of nonunion after epiphyseal separation, in one of which bony union was successfully induced fifteen years after the initial injury, by the routine operation for inserting the autogenous bone graft as in nonunion of the neck of the femur. Dr. Wilson's report proves the necessity of open reduction if malposition persists even to a slight degree, which is often much greater than is apparent.

DR. FRANK D. DICKSON, Kansas City, Mo.: Dr. Wilson's paper brings out two important points. The first is that it is difficult to replace displacements of the epiphysis by the closed method and frequently impossible. I agree with Dr. Wilson that when this is impossible, the open method is the logical procedure to follow. The second is the late occurrence of disability if these epiphyses are not adequately reduced. We know that the resultant interference with the mechanics of the joint makes such a joint a weak link in the structure, and we know that it is in these weak links that arthritis very readily takes up its abode; and once arthritis has occurred there, it is a difficult thing to get it out. Hence, Dr. Wilson has pointed out the road to take if our patients are to have a smooth journey through life, for they will not if we don't get these epiphyses replaced. As Dr. Campbell said, in the older cases there are two variations of displaced epiphyses, and I agree with him that they can be corrected by open operation. We must study and decide what would be the best in a given case. I feel that endocrine disturbances are in most cases the underlying cause. That the statics of this particular joint have a good deal to do with it is a fact, but we find other stigmas of endocrine disturbances, as the fat child and the small genitalia. I should like to ask Dr. Wilson whether in any of their earlier cases they have given treatment aimed toward improving endocrine action in these cases.

DR. CHARLES LEROY LOWMAN, Los Angeles: I have been fortunate in having associated with me for seven or eight years a man specializing in endocrine work, and I was intrested in the picture of the fat boy Dr. Wilson showed. I think there is a point that needs consideration, particularly by the surgeon who comes in contact with the fat boy who becomes a little tired and limps, and on examination one finds a displacement at the epiphysis from only a slight amount of trauma. I have a boy in mind who, while carrying a box of silverware, dropped 6 inches, on a step. On examination a month later, I found that he had bilateral displacement of the epiphyses. We have not as yet done any operations, but have had cases which had existed from six months to a year reduced by Whitman's method, slow manipulation being made, with heavy pressure downward on the trochanter. If we take into consideration the mechanics of this problem, we shall recognize that because of the knock-knee there is an upward and outward thrust, and with increased superincumbent weight more trauma exists than one would recognize. We have been following up endocrine factors and attacking that aspect of the problem as well as the static situation and the direct treatment of the displacement.

DR. DENNIS W. CRILE, Chicago: I was greatly interested in Dr. Wilson's presentation because of his mention of the fat people. It seems to me that the endocrine aspect of this epiphyseal dislocation is an important one. I have seen three cases of fat boys and girls who have had what we consider to be Perthes' or Legg's disease; i. e., osteochrondritis juvenilis. The roentgen-ray pictures were similar to Dr. Wilson's but without the actual traumatic displacement: the typical roentgen-ray picture of what we consider to be Perthes' disease. Three of these people I saw within four months. They were all children at adolescence, weighing from 140 to 180 pounds (63.5 to 82 kg.) with this typical somatic hypopituitary syndrome, so that I began to wonder at that time whether or not this combined hypopituitary adiposity and hip disturbance might not shed a light on the etiology of what we have termed by the proper names. The fourth case is one that I saw about four months ago. The patient complained of limp and pain in the hips. She had the general picture which the last speaker mentioned of flat-foot, knock-knee and hip pain. The roentgenogram of that hip, however, showed so little change compared to the opposite hip, that we could not determine the pathologic condition of the bone on two examinations. However, we felt that she had an incipient condition of pituitary disturbance in the head of the femur. She weighed 165 pounds (75 kg.), and we considered it obvious that she should not weigh so much and put her on a reducing diet so that she lost about 12 pounds (5 kg.) a month. After she had lost about 30 pounds (13.6 kg.), the pain in her hip-joint and limp disappeared, so we

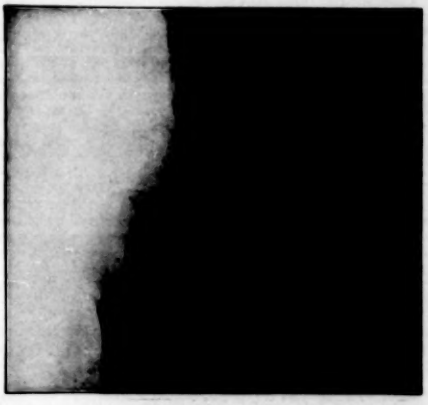

Fig. 11 (Case 5).—Result, nine months after the operative replacement of the epiphysis. The functional result was excellent.

believe that with her reduced weight, she will not come to the unfortunate circumstance of having a traumatic epiphyseal displacement, which occurred in these other cases probably by virtue of excess weight. Therefore I am interested in the fat boy and girl aspect of the case in relation to the pituitary gland and to osteochondritis juvenilis. We have tried administering pituitary extract, but noted no change so far in the bony growth. I should be interested to hear of further work in this respect, tending to simplify the classification of a large group of obscure bone conditions now bearing proper names.

DR. M. L. KLINEFELTER, St. Louis: I have been greatly interested in this paper, and my experience has been so similar to Dr. Crile's that I should like to ask Dr. Wilson whether he has removed any tissues in recent cases. I had for me a peculiar experience. I ordinarily do not get many of these cases, and I have had about nine in a year's time. Two of seven cases were bilateral; all of them but one case were reducible by the open or closed method, four of them, I think, by the closed method and three by the open method; one bilateral case was too old, or I thought too old, to undertake. All of these children to me were abnormal children. They were all stout but one, who was unusually slender. The boys were all very broad and fat about the hips. My endocrinologist friends tell me that they were all pituitary cases. One or two of these patients had bad tonsil trouble;

one thought that she got worse at the time of operation on her tonsils. All had a gradual onset. No one could tell when they separated the epiphysis. Practically every one walked on the hip after separation excepting the one I got immediately after the displacement. This one I got immediately following the accident, but she had a similar history with the other hip, and six months after reduction slipped on the kitchen floor and displaced the other one, with practically no trauma. We removed tissue in one of these cases; the pathologist's report was: "Mildly inflammatory." Several of my cases had such unusual tonsils and such a gradual onset that I should like to know whether Dr. Wilson had a report on the tissue removed.

DR. PHILIP D. WILSON, Boston: Dr. Campbell spoke of osteotomy of the base of the neck of the femur as the procedure that he had used in old cases. Of course, by this means it is possible to correct the coxa vara and without doubt many of the cases are benefited thereby. However, if we are going to have a joint that will function properly we must restore the normal anatomic relations, and in cases with much displacement, this can be done only by attacking the deformity at its seat. One of the speakers asked whether we had done anything to treat these patients from the standpoint of endocrine disturbance. I am sorry to say that we have not. We have had medical consultations in all the cases, but glandular therapy has not been advised. As a matter of fact, when these patients pass the age of puberty, a rather astonishing change occurs. They shoot up in height, grow less fat, and seem much more normal. I am interested in what Dr. Crile said about weight reduction in the obese type of patient. I shall be glad to try that out, but it will be difficult to control the enormous appetites of some of these boys and girls. Further efforts should be made with tissue study; our own attempts in this direction have yielded nothing. It is important to recognize and protect incipient cases. We had one patient come to the outpatient department before there was much deformity. A few days later she fell, and the epiphysis was completely displaced. With foresight, that could have been prevented. We were led to try operative treatment because in several cases we failed to obtain correction by the closed method. End-result studies by Dr. Key have shown that this is the rule rather than the exception. The results so far have been encouraging, and I believe we are justified in resorting to operation whenever correction is not obtained by other means.

## TRAUMATIC FAT NECROSIS *

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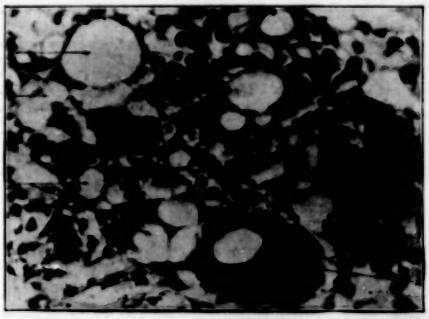
Innumerable minor injuries to the subcutaneous tissue occur without any noticeable or permanent damage. Occasionally a small, hard, painless mass appears to persist for some time. It is only in recent years that attention has been paid to this condition, beginning with a study of instances of it in the breast.

In 1920, Lee and Adair [1] reported two cases of fat necrosis in the female mammary gland for which condition radical mastectomy was performed in the belief that carcinoma was present. Since their preliminary report they have added seven more cases, and in February, 1923, Farr [2] reported seven cases occurring elsewhere in the body, but of similar etiology and pathology. Two cases of fat necrosis are being presented here, one of the breast and one of the inguinal region, the latter because so definitely due to trauma, and the breast case because of the importance, as emphasized by Lee and Adair, of the differential diagnosis from carcinoma; the small, firm mass in the breast with the orange peel skin and slight dimpling are signs of considerable moment, suggestive of malignancy.

Both patients sought relief on account of a painless lump, which at operation was found to lie in the subcutaneous fat. The first case presented a definite history of injury. The second patient, although exhibiting an area of ecchymosis, could not remember the receipt of any trauma. The source of this subcutaneous hemorrhage would seem to have been traumatic in all likelihood, as she gave no history of spontaneous hemorrhages elsewhere in the body at any time. The etiologic factor is thus assumed to be trauma in one case, and suspected trauma in the other. The duration of both these cases is very short, twelve and ten days, respectively, for the boy and the woman. I believe these are as early as any of the cases that have been noted.

This factor of trauma is of considerable interest, when we consider the thousands of instances of trauma to the subcutaneous fat, including that of the breast, and the comparative rarity of the reported cases of this condition. Farr, by some simple experiments, demonstrated that trauma can institute the changes described. Whether a simple ischemia is caused, or the liberation of a lipase known to be contained in fat is brought about, or whether the reaction is inflammatory, and why it occurs so infrequently is not known. It certainly is a less severe condition than the necrosis of fat associated with pancreatitis, in which relatively large areas lose all power of staining, and cholesterin crystals are frequently seen, as in xanthomas. Stewart,[3] Farr and Lee noted these crystals occasionally, and the latter noted calcification in some of the older cases. Farr, in many of his experiments, found crystals throughout the involved areas.



Appearance of specimen in Case 1 under high power, showing giant cells, as at *A*, containing fat droplets of various sizes; fat lobules of different sizes, as at *B*, and undergoing necrosis and becoming confluent at *C*; and macrophages, as at *D*.

The pathologic pictures were similar in many respects, exhibiting necrosis of the fat cells, round cell infiltration, an increase in the connective tissue, and the presence of giant cells in one case and of foamy cells in the other. In this respect, although these lesions are of approximately the same duration, the difference in degree is quite striking. The appearance of these foamy cells is considered to be due to the precipitation of the fatty acids as insoluble calcium soap after cleavage of the fat and the absorption of the glycerol. As even

* Read before the New York Pathological Society, April 10, 1924.
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1. Lee, B. J., and Adair, F.: Traumatic Fat Necrosis of the Female Breast, Ann. Surg. 72: 188 (Aug.) 1920.
2. Farr, C. E.: Ischemic Fat Necrosis, Ann. Surg. 77: 513 (May) 1923 (bibliography).
3. Stewart, M. J.: Jour. Path. & Bact. 19, 1914-1915.

lipomas contain lipase, it may be that just the right amount of tissue destruction must be accomplished before the changes become instituted, which would perhaps explain the infrequency of the condition.

CASE 1.—E. B., a boy, aged, 11 years, in November, 1920, was admitted to the Presbyterian Hospital, complaining of a firm swelling in the inguinal region. He stated that ten days before, while running in the street, he had fallen, striking the lower part of the abdomen on the ground. He went home, and his mother noticed a swelling in the left inguinal region and made cold applications with some diminution in the size of the swelling. She was certain no mass had been there before. There was no ecchymosis, no pain, no tenderness and no interference with function. The boy had chronic tonsillitis and mitral insufficiency, but was otherwise well.

Examination revealed, in the left inguinal region, a firm, rectangular mass, measuring 9 by 3 cm., lying with its long axis parallel to Poupart's ligament. This mass had extremely definite edges and was rather readily movable on the deep structures, but it was attached to skin. Raising the mass and even bending it caused no pain. No muscular defect was made out.

The square shape of the mass suggested an organized blood clot influenced by the directions of the fascial planes. A neoplasm of that size could hardly have appeared in ten days. As the mother was considerably concerned over the mass, it was felt that removal was indicated, and it was excised.

The specimen consisted of an encapsulated mass lying in the subcutaneous tissue, rather adherent to the subcuticular tissue, and loosely adherent at a few points to the aponeurosis. On section, it was composed of a saffron colored tissue containing considerable connective tissue, one large thick coated cyst and many smaller cysts, the contained material varying from thick to thin milky fluid.

The sections showed, as is apparent in the accompanying illustration, a relatively dense capsule surrounding a tissue composed of a loose connective tissue stroma containing many spaces of varying size containing fat. Throughout the section there were numerous giant cells of the foreign body type, containing within a somewhat reticular cytoplasm many vacuoles sometimes single and sometimes in groups. There were also many round cells, fibroblasts and some large cells resembling macrophages.

CASE 2.—H. M., a woman, aged 42, in October, 1923, was seen because of a lump in the breast. This lump had been noticed accidentally four or five days before she came to the hospital for advice. She remembered no injury to this region, but there was definite ecchymosis overlying a small, firm mass. She was moderately obese, with large, pendulous breasts, the type emphasized by Lee as being particularly liable to this condition, and it may well be that she received some slight trauma she could not remember.

After nine days of observation, the mass persisted unchanged but the ecchymosis had disappeared. It was approximately 1 cm. in diameter and seemed to be in breast tissue; but as it lay just beyond the areola, this relationship was difficult to determine. There was no retraction of the nipple, but the skin overlying the mass gave a suggestion of dimpling. The condition was taken to be fat necrosis, but there was the possibility of its being neoplastic. The mass was removed.

It lay definitely in the fat, outside the gland tissue. It was encapsulated, firm, and on section showed a yellow tissue with evident central hemorrhage. Sections showed fat, in which the fat cells varied greatly in size, some having become confluent with the formation of relatively large droplets. Throughout, one saw varying degrees of hemorrhage, with red blood cells in the intercellular spaces, and in many places a well developed organization of larger areas of hemorrhage, with the formation of richly cellular islands of young connective tissue. A fair number of new capillaries were present, however, aside from the organized areas mentioned, but few fibroblasts, round cells or macrophages. In spite of careful searching, we were unable to find a single giant cell. However, in many places foamy cells were present in considerable numbers. In some instances, these were arranged around some of the larger fat spaces. Free red blood cells, in rather large numbers, were seen among these foamy cells, some of which exhibited rather pyknotic nuclei. No cholesterin crystals were seen.

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# THE ROENTGEN-RAY TREATMENT OF HYPERTHYROIDISM

## REPORT OF ONE HUNDRED AND FOURTEEN CASES*

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This paper is written not with the idea of offering anything new in the treatment of hyperthyroidism but for the purpose of presenting the results of the roentgen-ray treatment of this disease so far as we can estimate them from careful study of the literature and from our own experience.

Parry recognized typical cases of exophthalmic goiter in 1776, but it was not until after a century of investigation by such great minds as Graves, Basedow, Stokes, Charcot and Trousseau that Moebius in 1886 placed its study on a rational basis by his theory that the disease is due to "hyperthyroidization." Kendall's discovery of thyroxin and his proof that it is the active principle of the thyroid gland, and the further experimental work and clinical observations of Plummer and his associates, of Du Bois, and of Means and Aub have served to establish the original theory of Moebius. The latter have also given us a practical means of determining the degree of activity of the thyroid by demonstrating that the basal metabolic rate is a true measure of such activity. Through Plummer's work we now know that there are two types of hyperthroidism, differing in their pathologic anatomy, their mode of onset, their clinical course, and their prognosis. The first is exophthalmic goiter, in which there is hyperplasia of the parenchyma of the thyroid gland resulting in overproduction of thyroxin; the second is toxic adenoma, in which the cells of the tumor take on the function of the thyroid and thus produce hyperthyroidism.

The methods of treatment in common use at the present time are those which have for their object the removal or destruction of the hyperfunctioning tissue. Of these, surgery is of course the foremost. The first operations for hyperthyroidism were probably those performed by Tillaux in 1880 and 1881. Rehn operated on a patient with exophthalmic goiter in 1884. The good results obtained by surgical treatment and their gradual improvement by the perfection of surgical technic since the beginning of the present century have served to establish surgery as the method of choice in the treatment of this disease. The end-results that may be obtained by operation are indicated by statistics compiled by Judd[1] from the Mayo Clinic. He reports the results in 100 cases of exophthalmic goiter in which operation was performed in 1914, and 100 cases of toxic adenoma in which operation was performed in 1917 and 1918. The average elapsed time since the first series was six years, and since the second series, two years. The exophthalmic goiter cases showed 65.8 per cent. cured; 13.6 per cent. markedly improved; 5.6 per cent. slightly improved, and 15 per cent. of the patients dead from all causes. The cases of hyperfunctioning adenoma showed 83 per cent. cured; 5 per cent. markedly improved; 1 per cent. slightly improved; 2 per

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Judd, E. S.: Results of Operations for Adenoma with Hyperthyroidism and for Exophthalmic Goiter, Ann. Surg. 72: 145-151 (Aug.) 1920.

cent. not benefited, and 9 per cent. of the patients dead from all causes. Improvement in operative technic and the substitution of subtotal thyroidectomy for lobectomy have probably resulted in an increase in the number of permanent cures in the last few years.

The following statistics of operative mortality are given by Pemberton [2] from the Mayo Clinic from July 1, 1920, to July 1, 1921: "Of the 281 patients with hyperfunctioning adenomatous goiter, four died, a mortality of 1.4 per cent. Of 677 patients with exophthalmic goiter, on whom 1,224 operations were performed (ligations and thyroidectomies), twenty-three died, a mortality of 1.87 per cent. by operations and 3.39 per cent. by patients." More recent statistics from the Mayo Clinic [3] show a further reduction in operative mortality in exophthalmic goiter to 1.77 per cent.

It should be kept in mind, in interpreting statistics of surgical results, that the figures represent only the patients operated on, and give no idea of the number refused as inoperable. It should be said in this connection, however, that there has been a gradual decrease in the number of cases considered inoperable because of improvement in preoperative treatment and in surgical technic, by preliminary ligations and injections. A recent advance in this respect has been through Plummer's discovery that the administration of iodin reduces thyroid activity as measured by the basal metabolic rate, and causes marked amelioration of the symptoms in patients with exophthalmic goiter. This has not only brought more cases into the operable class, but it has also reduced operative mortality by lessening the danger of postoperative hyperthyroidism.

It seems fair to conclude from available statistics that the surgical treatment of hyperthyroidism, including under that head both exophthalmic goiter and the less serious disease, toxic adenoma, cures about 75 per cent. of all cases in which operation is performed; that there is an operative mortality varying from about 1.5 per cent., in the best hands and under the most favorable conditions, to about 3.5 per cent. among the average good surgeons of the country, and that there is a certain unknown percentage of cases that are inoperable.

The fact that there is a certain mortality in the surgical treatment of hyperthyroidism and that operation cannot be performed in all cases has led an increasing number of internists to the use of the roentgen ray for the treatment of this disease. The rational basis for this method of treatment is the known fact that the cells of the parenchyma of glandular structures are particularly susceptible to the destructive effect of the roentgen ray.

The objections that have been raised to the use of the roentgen-ray method in the treatment of this disease are that: (1) there is no statistical proof that this method affords a permanent cure; (2) the time necessary for roentgen-ray treatment increases the opportunity for cardiovascular and visceral changes to occur, and a certain number die of hyperthyroidism while taking the treatment; (3) subsequent operation is rendered more difficult because of adhesions, and (4) the function of the thyroid may be so reduced by the treatment as to cause hypothyroidism.

We have discussed all of these objections in a previous paper,[4] and our purpose now is to present evidence bearing on the permanently curative value of roentgen-ray treatment in patients with exophthalmic goiter. It must be recognized that the roentgen ray has been used for this purpose for only a comparatively short time. Surgeons have been operating on patients with hyperthyroidism for more than forty years, but it was not until twenty years ago that the surgical method began to be widely accepted. The roentgen-ray method is now in somewhat the situation of surgery up to about 1905, before which time the so-called medical treatment was that usually employed; then, the burden of proof for the permanent curative value of operation was still on the surgeon. The roentgen-ray treatment of exophthalmic goiter has not yet been used for a sufficient length of time to enable us to point to large numbers of patients who have remained free from the disease for several years. We cannot yet speak in terms of definite percentages. It is necessary, therefore, to judge of the results of this method of treatment in the same way that surgical results were estimated in the period before a great mass of statistical material was available. We must consider the course and outcome in individual cases, and be governed by the uniformity and regularity with which such results are obtained. With this in view, the following case reports and a discussion of such statistical material as we now have available are presented:

### REPORT OF CASES

CASE 1.—Miss M. W., aged 48, a school teacher, seen, Nov. 26, 1921, had been nervous and had had slight enlargement of the thyroid for the past five years. There was now slight exophthalmos and moderate, symmetrical enlargement of both lobes of the thyroid and of the isthmus. The pulse was 122 and somewhat irregular; temperature, 98.4 F.; respiration, 28; weight, 106½ pounds (48.3 kg.). There was marked tremor of the fingers and eyelids. The basal metabolic rate was plus 30 per cent. The diagnosis was exophthalmic goiter of moderate severity. Three areas, one over each lobe of the thyroid and one over the thymus, were treated with the following technic: 5 ma., 8-inch spark-gap, 5 minutes at 8 inches distance through 5 mm. of aluminum. A second treatment was given, December 19, when the patient stated that she felt better. There was no tremor or nervousness; the pulse was 120. There was no skin reaction from the previous treatment and no roentgen-ray sickness. The same three areas were treated, Jan. 9, 1922, when the patient was clinically in the same condition as at the previous treatment. January 21, all symptoms were worse than at any previous time, with the basal metabolic rate plus 60 per cent., marked tremor of the lips and fingers, rapid pulse, etc. Only two areas, over the thyroid, were treated on this date. Following the treatment, there was considerable erythema over the areas treated, which had subsided when the patient was seen, February 24, when she looked and felt much better. Her condition improved continuously after this date. April 1 and April 25, two final treatments were given over three areas, with the usual technic; May 12, the patient was clinically well, with a basal metabolic rate of plus 5 per cent.; weight, 115 pounds (52 kg.). The patient returned to her work as school teacher in September, 1922, and has worked since, with no return of the former symptoms. The weight has increased; exophthalmos has disappeared; the pulse was 98 when she was last seen. May 24, 1924, the patient stated that she had been hoarse for some months after the treatment, but this had completely disappeared. The thyroid was not perceptibly enlarged, but its consistency was somewhat harder than that of a normal gland. There was considerable telangiectasis over the areas treated. The basal metabolic rate on this date was plus 21 per cent.

This patient had typical exophthalmic goiter with moderately severe symptoms. Seven roentgen-ray treatments were given over a period extending from Nov. 26, 1921, to April 25, 1922. The disease was well

2. Pemberton, J. D.: The Surgical Management of Toxic Goiters, Boston M. & S. J. 190: 244-254 (Feb. 23) 1922.
3. Pemberton, J. D.: Mortality in Surgery of Goiter, Surg. Gynec. & Obst. 39: 458-462 (April) 1923.
4. Groover, T. A.; Christie, A. C., and Merritt, E. A.: A Review of the Treatment of Hyperthyroidism by All Methods, with a Summary of the Authors' Experience with Roentgen Therapy, Am. J. Roentgenol. 10: 385 (May) 1923.

under control by the middle of February; that is, about two and one half months after treatment was begun. The fact that the basal metabolic rate is now somewhat above normal must place this case in the category of those distinctly improved but not completely cured. Such patients should have another course of treatment. The patient is in no worse condition than those who have a recurrence after operation and, so far as can be determined by physical examination, has suffered no permanent cardiac damage. This case also indicates the necessity for having the basal metabolic rate determined at least yearly after cessation of treatment.

CASE 2.—Miss J. E., aged 50, seen, Sept. 26, 1922, had a distinct enlargement of the thyroid and other clinical symptoms. The history was unimportant; the patient was tall and slender, weighing 138 pounds (62.6 kg.). The chest, abdomen and extremities showed no evidence of abnormality. The condition of the mouth was good; the tonsils had been removed. Both lobes of the thyroid were distinctly enlarged, the right more than the left; the swelling was firm and not tender; there was no exophthalmos and no Graefe or Stellwag sign. The heart was normal in size and position, with the action regular and frequent; there was a systolic murmur over the base, transmitted upward and believed to be functional. The station was slightly unsteady and there was marked, fine tremor of the fingers. The reflexes were all present but slightly sluggish. The basal metabolic rate was plus 75 per cent., the temperature, 98 F., and pulse, 130. The diagnosis was exophthalmic goiter of moderate severity. Roentgen-ray treatments over the usual three areas and with the usual technic were given, Oct. 4, Oct. 26, Dec. 13, 1922, and Jan. 3, 1923. The basal metabolic rate gradually fell to plus 9 per cent., January 2. May 7, 1924, the patient reported that she had done all her own housework since the time of the last treatment and had felt well all the time; she slept well and had a good appetite. There was slight symmetrical enlargement of the thyroid, much less than when first seen; the weight was 175 pounds (79.4 kg.); basal metabolic rate, plus 1 per cent.; pulse 70 and regular.

This patient had a well marked case of exophthalmic goiter. All symptoms disappeared and the basal metabolic rate fell to within normal limits after three treatments. A fourth treatment was given as a precautionary measure, Jan. 3, 1923. She has remained clinically well up to the present time, May 24, 1924, and the basal metabolic rate at this time is plus 1 per cent.

CASE 3.—L. H. F., a man, aged 31, seen April 1, 1922, stated that he had always been well until about one year before, when he noticed marked nervousness, excessive perspiration, tremors in the hands and legs, great general weakness, and beginning enlargement of the thyroid gland. He was tall and slender and weighed 125 pounds (56.7 kg.), with very marked exophthalmos and marked symmetrical enlargement of both lobes of the thyroid gland. There was tremor of the eyelids, lips and fingers, and marked general weakness; the pulse varied from 128 to 140 and was very irregular; the basal metabolic rate was plus 71 per cent. The diagnosis was exophthalmic goiter of much greater severity than even the rate of plus 71 per cent. would indicate, and the condition was considered inoperable. Roentgen-ray treatments over the usual three areas and with the usual technic were given April 4, April 26, May 18, and June 8, 1922. On the latter date the general condition seemed much better, but the pulse was very rapid. June 17, the basal metabolic rate was plus 36 per cent., and all symptoms were still very marked. Roentgen-ray treatments were given, June 17, September 15, October 16 and November 6. November 20, the basal metabolic rate was plus 27 per cent. There was a perceptible decrease in the size of the thyroid; all symptoms were greatly improved. December 11, another treatment was given. The patient was able to return to work in April, 1923. For the first six months of 1923, he had been unable to talk above a whisper, but his voice gradually returned, so that, May 24, 1924, it was practically normal. The pulse was somewhat irregular and there was slight exophthalmos. The thyroid showed only slight enlargement, but both lobes were exceedingly hard. The weight on this date was 137 pounds (62 kg.). The patient stated that he does his work, which requires much walking, without inconvenience, he sleeps well and his appetite is good. Feb. 19, 1924, the patient's basal metabolic rate was minus 21 per cent.

At the beginning of treatment, this patient had toxic manifestations of great severity, and the condition was not considered operable. All symptoms were greatly improved after the fourth treatment, but the basal metabolic rate did not reach normal until after eight treatments. The rate at the present time is somewhat below normal, but there are no clinical manifestations of hypothyroidism. Our experience in several other cases in which the basal metabolic rate has gone below normal indicates that it will gradually increase to within normal limits.

CASE 4.—F. D., a man, aged 45, seen, April 25, 1921, had exophthalmic goiter of an extremely severe type, considered inoperable. The patient, who had been a policeman for twenty-two years, stated that for more than a year he had had palpitation of the heart and had gradually lost weight until he was now 65 pounds (29.5 kg.) below his usual weight. Adenoids and tonsils were removed in 1920, and several teeth were extracted then or have been extracted since. The patient had typhoid in 1900. There was marked symmetrical enlargement of both lobes of the thyroid gland, marked exophthalmos and tremor of the eyelids and fingers, marked edema of the scrotum and ankles, and abdominal ascites, the latter relieved by tapping three different times. The basal metabolic rate was plus 133 per cent.; temperature, 99.1; systolic blood pressure, 118, and diastolic, 80; weight, 142½ pounds (64.6 kg.). May 17 and June 6, roentgen-ray treatments were given over the usual three areas with the usual technic. June 27, the patient was exceedingly weak and nervous, with the pulse rapid and irregular. Treatment was given over three areas with the usual technic. July 21, the area over each lobe of the thyroid was treated with 5 ma., 9-inch gap, 15 minutes at 10-inch distance, through 5 mm. of aluminum. There was considerable erythema from the last treatment, which disappeared by August 18, when the usual treatment was given. At this time, the thyroid was distinctly smaller; the patient was weak and his general condition very bad. September 15, all symptoms were improved except the heart action; the thyroid was much smaller. A final treatment was given, October 28, at which time there was marked general improvement, which continued under continuous observation. A hoarseness, noted in December, 1921, persisted during the early part of 1922, but gradually disappeared. There was some brawny thickening of the tissues of the neck, which also disappeared. The patient gained in weight and strength and returned to duty, Nov. 1, 1922, since which time he has not lost a day. Jan. 17, 1923, the basal metabolism was plus 15 per cent. The patient now weighed 210 pounds (95.2 kg.). There was very slight exophthalmos. The thyroid was small but palpable and somewhat harder than normal. There was rather marked telangiectasis over the areas treated. The pulse was 80, full and regular. There was no clinical evidence of the presence of hyperthyroidism.

CASE 5.—Miss D. S., aged 21, seen, Dec. 28, 1922, stated that a year or more ago she had noticed enlargement of neck, which had slowly increased. In October, 1922, she noticed a shortness of breath and rapidly beating heart on slight exertion and even when lying down. She perspired very freely. There was moderate symmetrical enlargement of the thyroid; there was no exophthalmos; the pulse was 142 and somewhat irregular; there was marked tremor of the eyelids and fingers. Clinically, the patient was markedly toxic. The basal metabolic rate, Jan. 2, 1923, was plus 75 per cent. Roentgen-ray treatments with the usual technic were given, Jan. 5, Jan. 30, Feb. 20, and March 13, 1923. April 18, the general condition was markedly improved. Pulse was 100. The patient had gained 4 pounds (1.8 kg.) in weight. There was no tremor. It was decided to await the result of basal metabolic rate

before further treatment. May 4, the basal metabolic rate was plus 8 per cent. There was no clinical evidence of toxicity. May 29, the patient, who had been kept under observation, had had no return of symptoms of hyperthyroidism. She has been living a normal life without restriction of activity and is now clinically well.

In a previous paper,[4] we made the following statement with regard to our own experience: "We have treated 114 cases of hyperthyroidism and sufficient time has elapsed to state that thirty-two of these patients are cured, as indicated by their clinical condition and continued normal basal metabolic rate. Three patients have died; one of influenza, one of pulmonary tuberculosis, and one of hyperthyroidism. Four patients have been operated on after roentgen-ray treatment, but in only one of these was the roentgen-ray treatment given sufficient trial. Six of our patients had had previous lobectomies or thyroidectomies." We are now able to state that fifty-eight patients of the 114 cases previously reported are cured, and twenty-three patients show such definite improvement that they will probably all be placed in the cured list eventually. Six of these patients have died, but death is attributable to the results of hyperthyroidism in only one patient, an inoperable case, who died after only one roentgen-ray treatment had been given.

We look on these results as very satisfactory, especially when we consider that many of the cases submitted to roentgen-ray treatment are of very severe type with a basal metabolic rate above plus 100 per cent., and that some of them are quite inoperable because of their extreme toxic condition, or the presence of some concurrent disease, and that others are operative failures.

## CONCLUSIONS

1. A study of the results of roentgen-ray treatment of hyperthyroidism in individual cases and by means of the incomplete statistics so far available indicates that this method will probably furnish about the same percentage of permanent cures of exophthalmic goiter as surgical treatment in the best hands.

2. The roentgen-ray method has the following advantages: (*a*) There is no mortality resulting from the treatment; (*b*) patients will submit to this method of treatment at a much earlier stage of the disease than to operation; (*c*) the method is applicable to inoperable and to postoperative cases.

3. Patients with hyperthyroidism should first receive roentgen-ray treatment, and be operated on only if the disease fails to respond to this treament. This would not apply to patients with toxic adenoma with mild hyperthyroidism who have no vascular or other diseases which render them inoperable. The operative mortality in this class of cases is very low, and surgery has the great advantage of removing the tumor. Our general impression is that roentgen-ray treatment is not so useful in toxic adenoma as in exophthalmic goiter, but that it may be of great advantage in rendering very toxic cases operable and in the treatment of cases that are inoperable for reasons other than the hyperthyroidism.

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## ABSTRACT OF DISCUSSION

Dr. Robert G. Allison, Minneapolis: My experience with the roentgen-ray treatment of hyperthyroidism dates from January, 1920. Of thirty-seven patients treated by this method, thirty-five got well and have remained well. In the two cases in which we failed, one patient made an uneventful recovery after operation; the other one died an operative death. Our results have been much better in the cases in which the basal metabolic rate was below 50. Patients with extremely high basal metabolic rates should be treated with the idea of making them better operative risks. The larynx should be protected with lead during the treatments. Close cooperation between the referring physician and the roentgenologist is absolutely essential. Several surgeons have reported their statistics on operations instead of on patients. This has given the impression that their operative mortality is only one third as high as it actually is. Roentgen-ray burns have occurred in the hands of careless operators. These have invariably been due to omission of the filter. There is no necessity of producing even the slightest erythema in treatment of the thyroid.

Dr. R. I. Rizer, Minneapolis: I have had four years' experience in the treatment of hyperthyroidism by roentgen-ray and other management. With roentgen-ray treatment I have had relief of symptoms. First came a diminution of the heart rate, which has been rather prompt. This usually follows the first or second treatment. It does not occur in patients who have had an old cardiac lesion; in this type no great pulse changes will follow roentgen-ray or any other management. A diminution of the basal metabolic rate is usually rather prompt. I have separated my cases rather arbitrarily into two groups; first, cases in which the basal metabolic rate is over + 50. These patients should probably be treated surgically some time or other, but first by the roentgen ray to diminish the basal metabolic rate and to lessen toxic symptoms. In addition, the rest they will receive will make a better surgical risk with a lower mortality. Patients with a metabolic rate of less than + 50 are relieved of symptoms and usually do not need surgery. It depends on the intensity of the treatment. The more intense the treatment, the quicker the results and the fewer treatments will be necessary. The majority of my patients received from four to six treatments. There has been no mortality. In many thyroid cases, following roentgen-ray and iodin treatment, with rest, the basal metabolic rate will drop to a normal point and the symptoms disappear. Surgery should not be resorted to when the basal metabolic rate is rising. I have had no myxedemas. If one is careful, watching the basal metabolic rate before and after each treatment, there will be no myxedema. The roentgen-ray treatment should be stopped when the rate reaches + 20. I am afraid of treating toxic adenomas by roentgen-ray for the fear of encountering carcinoma. The roentgen-ray treatment is absolutely devoid of any bad after-effects, if proper care is exercised. The nonprotection of the larynx in some of my early cases produced a severe laryngitis, which lasted several weeks, but that has all been done away with by protecting the larynx.

Dr. W. F. Manges, Philadelphia: To do serious thyroid surgery, a surgeon should be especially equipped. There are special thyroid clinics in this country as well as in other countries. The results there are at their best. Now, not all patients can go to such centers, and the general surgeon is not really equipped to do thyroid surgery. The mortality statistics mentioned here are probably taken from thyroid clinics, and I doubt whether they include the surgical treatment of exophthalmic goiter and toxic thyroids over the country generally. With irradiation, there is no difficulty. Any roentgenologist who has paid any attention to the technic may easily apply the treatment. It does not require any special skill. These patients are scattered over the wide world. They do not have access to a roentgenologist, or to one who has radium, and for that reason we should encourage this particular type of treatment for the poor person who cannot go to the surgical center. Another point: It is very fine to have a laboratory for studying and checking by means of the metabolic test, but there is no reason why the man who is in a small city and has not access to one who is skilled in making these metabolic tests should not depend on his clinical judgment or that of the internist who must be available and treat the patient. The metabolic rate test is not always satisfactory, even in good laboratories. I want to make the point that the average man must not be afraid to do something for this class of patient. He must not feel that because he does not have access to a highly efficient laboratory, and that sort of thing, he must let those patients alone.

They should be treated. As to focal infection in association with this condition: Abscessed teeth, diseased tonsils particularly, and chronic sinus disease must be eradicated. I have seen patients under irradiation improve just so far and then stop, and when some focal infection was discovered and removed, they would immediately proceed to a normal metabolic rate, and all distressing symptoms disappeared.

DR. H. J. ULLMANN, Santa Barbara, Calif.: There was something spoken of in the discussion of which I think we should be very careful. It is a point that will be seized on by those who are directly opposed to the treatment of hyperthyroidism by irradiation. It is the possibility of producing a skin reaction. I am not using the word "burn." I do not believe that it is necessary, and we should go on record as saying that it is not necessary, to produce an injurious effect on the skin when irradiating thyroids. If it is necessary to go to that point with aluminum filtered radiation, we can go far beyond by using copper filtered radiation. One can get a magnificent "kick," that is, overdosage, at a single sitting in hyperthyroid cases by one sixth of that dose, which will produce a skin reaction in only 50 per cent. of cases. I have seen a "kick" from one twelfth of a dose. One can get the effect desired without even approaching a skin reaction if one uses a proper technic.

DR. A. C. CHRISTIE, Washington, D. C.: I should like to emphasize Dr. Ullmann's remark regarding the skin reaction. It is advisable to avoid skin reactions, if possible, in exophthalmic goiter, but sometimes it is necessary to give large doses, and we have hesitated to use copper filtration and the higher dosage because of the danger to the cartilages of the larynx. I should also like to emphasize the necessity of protecting the larynx. That is of great importance. That has been emphasized by our experience in two cases reported today. The patients lost their voices after treatment and remained hoarse many months. One other point is this: The judgment between the value of surgery and the roentgen rays has been greatly affected by the general idea that surgery always cures this disease. The statistics I have read from the Mayo Clinic show that surgery permanently cures about 68 per cent. of the cases of exophthalmic goiter, so that we are not comparing with a method that effects a cure in all cases.

## THE PHYSIOLOGIC EFFECT OF MASSAGE *

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In connection with a study of arthritis and rheumatoid conditions, analysis has been attempted of some of the measures known to benefit them. Conspicuous among these measures are exercise, the application of external heat and massage.

The use of massage and hydrotherapy dates from ancient times. The practice of each, however, has been mostly in the hands of persons untrained in medicine and not infrequently deficient in general education. Probably for this reason, in part, massage and hydrotherapy have received but little critical analysis as to the physiologic effects they produce, although their application to a host of disorders establishes them as among the most important and fundamental measures at our command.

The wide use of external heat in the form of "bakes," hydrotherapy, mud baths, vapor baths and the like in the arthritic or rheumatoid syndrome leaves no room for doubt as to their beneficial influence.

In a series of previous contributions,[1] we have pointed out that profound changes follow even a mild therapeutic exposure of the human body to external heat. In addition to the profuse sweat familiar to every one, there occur a heightened circulation, increased pulmonary ventilation, increased percentage saturation of the venous blood with oxygen resulting from increased blood flow, an increase in the alkalinity of the blood, an alkaline urine and a change in the reaction of the sweat from its initial point to a reaction less acid or more alkaline. These changes in reaction are brought about by a loss of acid from the body, chiefly carbon dioxid, through the lungs, urine and sweat in the order of magnitude named, which results in a relative excess of alkali. This excess of alkali alters the reaction of the blood and is then eliminated through the urine and sweat, producing the swing toward the alkaline range in the fluids mentioned. Koehler [2] has obtained comparable results.

Similarly, close students of arthritis and rheumatoid disturbances appreciate that active exercise on the part of the subject of these diseases is also highly beneficial, when the physical condition permits of its being carried out. Many persons with subacute rheumatic myositis can ward off or prevent attacks by exercise of the involved muscles, and more diffuse types of involvement are often greatly helped by exercises taken regularly, especially in the morning and evening.

Rheumatic patients frequently exercise single parts, such as the knee or biceps muscle, without medical advice, having learned that disuse often leads to stiffness and that activity tends to lessen or prevent it. Again, the frequent disability of the arthritic patient in the early morning hours undergoes a betterment as the day progresses, more or less commensurate with the degree of activity indulged in.

The recent researches of Barr and his co-workers [3] have demonstrated that exercise is accompanied by a state of affairs opposite to that following exposure of the body to heat. The actively contracting muscles produce lactic acid in amounts sufficient to change the acid-base equilibrium and reaction of the blood for as much as fifty minutes or more after vigorous exercise, notwithstanding the compensatory hyperventilation and removal of carbon dioxid. Relatively small amounts of exercise induce this change, which may persist in arterial blood for as much as fifty minutes or more after vigorous exercise. The change in venous blood is in the same direction. The exercise prescribed was usually about 3,500 kilogrammeters in three and one-half minutes, or the equivalent for a man of 150 pounds (68 kg.) of climbing 150 steps, one step each second. Exercise of this degree is obviously accompanied by a heightened circulation.

In view, therefore, of the clinical benefits from these groups of measures, and in view of the rather opposite effects which chemical studies of the blood and urine have shown them to have, it seemed desirable to study, more critically than had been done, the nature of the influence of massage. Massage appears to partake somewhat of the nature of exercise, and it seemed important to ascertain which, if any, of the factors

* From the Laboratory of Clinical Chemistry, Presbyterian Hospital.
* The work here reported is part of a study on arthritis in collaboration with Dr. Robert B. Osgood of Boston. The expenses of this investigation were defrayed by contributions from several sources, including a number of patients.

1. Cajori, F. A.; Crouter, C. Y., and Pemberton, Ralph: Effect of Therapeutic Application of External Heat on Acid-Base Equilibrium of the Body, J. Biol. Chem. 57: 217 (Aug.) 1923.
2. Koehler, A. E.: Acid-base Equilibrium: Clinical Studies in Alkalosis, Arch. Int. Med. 31: 590 (April) 1923.
3. Barr, D. P.; Himwich, H. E., and Green, R. P.: Studies in Physiology of Muscular Exercise, J. Biol. Chem. 55: 495 (March) 1923.

operative in the other measures discussed are operative here. By studying several beneficial measures having different influences on the rheumatic syndrome, something of the nature of the underlying pathologic condition might be ascertained by determining some of the common denominators between them. A search of the literature reveals no studies on the effects of massage on the chemistry of the fixed and fluid tissues of the body. The only observations of importance bear on the changes induced in the cell count. Thus, Mitchell [4] showed in 1894 that in health and in anemia massage increases the number of red cells, especially in anemia, and that in anemia the increase is greatest after an interval of one hour, beyond which it slowly decreases. This rise has also been observed by Dr. E. G. Peirce working in connection with us. Further work is pending.

Studies were therefore undertaken on five arthritic patients, sufficiently active and robust to permit of general and severe massage, in respect to the hydrogen-ion concentration, carbon dioxid content, oxygen content, oxygen capacity, percentage oxygen saturation, inorganic phosphorus and lactic acid of the venous blood before and after massage, and also the hourly volume, hydrogen-ion concentration, titratable acid, organic acids and inorganic phosphorus of the urine before and after massage.

The accompanying table shows the results obtained.

The blood gases were determined by the method of Van Slyke and Stadie [5] on venous blood collected under oil. Hawkins' modification of Cullen's colorimetric method for the $p_H$ of plasma,[6] and Clausen's [7] procedure for lactic acid were used. Inorganic phosphorus in blood and urine was determined by Briggs' [8] method. The hydrogen-ion concentration of the urine was determined by Felton's [9] modification of Clark and Lub's method. The titratable acidity was obtained by titration to a $p_H$ of 7.4. Organic acids were determined by the method of Van Slyke and Palmer.[10]

In three of these individuals the massage was given by a trained masseuse, in conjunction with Dr. E. G. Peirce, who was familiar with the general process and technic. The treatment lasted about an hour. In the fourth and fifth case, the massage was given vigorously by a trained masseuse alone. In general, there can be no doubt as to the vigor with which the treatments were carried out.

Inspection of the table reveals very slight differences in any of the blood figures obtained before and after treatment, with the exception of the inorganic phosphorus and the oxygen capacity. This is the more noteworthy in that vigorous active exercise of the forearm alone is sufficient to increase the lactic acid content of the venous blood at the elbow.[3]

The figures for lactic acid of the blood in the present series did not show the increase observed by Barr, Himwich and Green following exercise of varying degrees, and were within normal limits with the exception of one case. The reason for the low figures in this case is not apparent, but at least they were not in the direction of an increase. Furthermore, the urine showed no constant increase in organic acids, which would presumably have been the case had lactic acid been excreted in the urine, as described by Wilson,[11] following exercise of moderate severity.

*Effect of Massage on Composition of the Blood and Urine*

| | | | Blood | | | | | | Urine | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case | Time | $p_H$ | Carbon Dioxid, Content, per Cent. by Volume | Oxygen Content, per Cent. by Volume | Oxygen Capacity, per Cent. by Volume | Oxygen Saturation, per Cent. | Lactic Acid, Mg. per 100 C.c. | Inorganic Phosphorus, Mg. per 100 C.c. | Hourly Volume C.c. | Titratable Acidity, C.c. Tenth Normal Acid per Hour | $p_H$ | Organic Acids,* C.c. Tenth Normal Acid per Hour | Inorganic Phosphorus, Mg. per Hour | Comment |
| 1 | Before | 7.38 | 49.0 | 8.5 | 15.4 | 55 | 10 | 2.48 | .... | .... | ... | .... | .... | Small and thin; greatly emaciated, with acute arthritis; had not been out of bed morning of massage |
| | 30 minutes after | 7.37 | 47.8 | 8.7 | 15.9 | 55 | 15 | 2.38 | | | | | | |
| 2 | Before | 7.37 | 54.8 | 7.2 | 15.0 | 48 | 22 | 3.17 | 27.5 | 8.0 | 5.2 | 20.5 | 10.5 | Medium weight; acute arthritis |
| | 10 minutes after | 7.36 | 53.0 | 6.6 | 15.1 | 44 | 20 | 2.57 | 177.5 | 2.7 | 6.7 | 72.1 | 15.9 | |
| 3 | Before | 7.37 | 50.6 | 4.9 | 17.2 | 29 | 25 | .... | 62.5 | 23.7 | 5.0 | 60.6 | 23.7 | Very fat; fairly acute arthritis |
| | 15 minutes after | 7.39 | 54.4 | 5.6 | 17.4 | 32 | 15 | .... | 97.2 | 16.2 | 5.2 | 62.2 | 22.0 | |
| 4 | Before | 7.39 | 53.7 | 7.6 | 17.5 | 43 | .. | 2.42 | 73.0 | .... | 7.2 | 62.7 | 28.4 | Medium weight; active; slight arthritis only |
| | 5 minutes after | 7.37 | 51.5 | 8.8 | 18.6 | 91 | 20 | 2.78 | 107.0 | .... | 7.4 | 61.0 | 28.3 | |
| 5† | Before | 7.39 | 57.6 | 9.3 | 17.5 | 52 | 7 | .... | 72.0 | 0.7 | 5.4 | 23.4 | .... | Same as Case 4 |
| | 5 minutes after | 7.37 | 54.9 | 8.6 | 16.2 | 67 | 20 | .... | 220.0 | 5.1 | 7.0 | 48.4 | | |
| | 80 minutes after | 7.39 | 54.5 | 8.4 | 16.1 | 66 | 8 | .... | 175.6 | 7.9 | 6.6 | 52.0 | | |

* Uncorrected for creatinin.
† No abdominal massage.

The blood figures showed no significant change. Three of them showed a decrease in alkalinity amounting to 0.01. One case showed a decrease amounting to 0.02. Changes of comparable magnitude were observed in venous blood by Barr, following exercise of about 1,000 to 2,000 kilogrammeters, but it is to be borne in mind that the latter constituted very mild exercise, whereas the massage given in the present series was fully as vigorous as could be borne within therapeutic limits.

A marked diuresis was observed in three cases. This was accompanied by an alkaline tide in the urine, as evidenced by changes in $p_H$ and titratable acidity. Henderson and Palmer,[12] and more recently others, have pointed out the increased $p_H$ that frequently accompanies an increased urinary volume. When diuresis was slight, in the present studies, the increase in urinary alkalinity was also less.

There was no constant change in the percentage saturation of the blood with oxygen, such as follows exposure of the body to external heat, and hence no evidence from this source of an increased rate of circu-

4. Mitchell, J. K.: J. M. Sc. 107:502, 1894.
5. Van Slyke, D. D., and Stadie, W. C.: Determination of Gases of the Blood, J. Biol. Chem. 49:1 (Nov.) 1921.
6. Hawkins, J. A.: Micro Method for Determination of Hydrogen-Ion Concentration of Whole Blood, J. Biol. Chem. 57:493 (Sept.) 1923.
7. Clausen, S. W.: Method for Determination of Small Amounts of Lactic Acid, J. Biol. Chem. 53:263 (May) 1922.
8. Briggs, A. P.: Bell-Doisy Phosphate Method, J. Biol. Chem. 53:13 (July) 1922.
9. Felton, L. D.: Colorimetric Method for Determining Hydrogen-Ion Concentration of a Small Amount of Fluid, J. Biol. Chem. 60:299 (April) 1921.
10. Van Slyke, D. D., and Palmer, W. W.: Studies of Acidosis: Titration of Organic Acids in Urine, J. Biol. Chem. 41:567 (April) 1920.
11. Wilson, D. W.: Proc. Soc. Exper. Biol. & Med., May 24, 1924.
12. Henderson, L. J., and Palmer, W. W.: J. Biol. Chem. 17:305, 1914.

lation. The oxygen capacity, however, rose slightly, though definitely, in all cases.

It is obvious, therefore, that in the therapeutic application of massage, in a manner as vigorous as can be tolerated by the average person, there takes place none of those changes in the venous blood or in the urine which characterize the acid swing of active exercise or the acid elimination and alkaline swing following exposure of the body to external heat.

The absence, then, of demonstrable chemical changes, to account for the benefits of massage, gives added emphasis to the mechanical effects accompanying it.

The influence of external stimuli on the capillary circulation has been demonstrated by Krogh and his co-workers. Thus, Carrier [13] has shown that light pressure causes a practically instantaneous, though fleeting, dilatation of the capillaries, while heavier pressure may have a more lasting effect. In fields that may have been quite pale under microscopic observation, with a few capillaries open, all the capillaries may thus be opened. The effect of these changes on the amount of blood flowing through such a region and on the liberation of cells contained within previously closed areas is obvious.

In addition to the effects of general massage on the blood count, observed by Mitchell,[4] quoted above, Schneider and Havens [14] have shown that abdominal massage increases the hemoglobin and red cells in finger blood at average barometric pressures. They also showed that after acclimatization to considerable altitudes, this result becomes less apparent and finally ceases. Their explanation is that the effect of lowered barometric pressure is to bring about a passage into the general circulation of a large number of red corpuscles that are ordinarily stored away. This explanation is questioned, however, by Scott,[15] who ascribes the change to a concentration of blood. There is no question, however, that massage causes a rise in the red corpuscles of the peripheral blood, whatever the precise mechanism involved. This is further indicated by the small but consistent rise in the oxygen capacity of the blood in all of the cases here reported. It appears, therefore, that changes in the local or general circulation, or both, constitute at least one of the common factors accompanying the beneficial influence of active exercise, exposure of the body to external heat and vigorous massage.

Evidences have been previously adduced by one of us [16] suggesting that arthritic and rheumatoid conditions arise, in part at least, from disturbances of the blood flow, and that most measures of value to the specific pathology stand in some relation to this. The conclusion reached is additionally corroborative of this view.

There is another point to be noted in contrasting the systemic effect of active muscular exercises and those of passive muscular exercise in the form of massage. The work accomplished by the subjects of Barr's studies, in which the formation of lactic acid and a systemic acidosis were clearly demonstrated, was relatively mild. Passive exercise in the form of massage given to the subjects of the present studies was probably as nearly comparable to this as measures of a different order could be, and was accompanied by rather more lasting subjective evidences of activity and fatigue. It seems fair to deduce, therefore, that the production of lactic acid by muscle, as revealed in the circulating blood, depends chiefly or entirely on active contraction of the muscle per se, as induced by the usual nerve stimulus, and cannot be brought about by extraneous mechanical stimuli of therapeutic degree. This is noteworthy, and probably explains the applicability of massage and rubbing to exercised, fatigued and even injured muscle. If massage produced additional amounts of lactic acid, the benefits to overexercised muscles would be difficult of explanation. Experience, however, has shown that massage, in the form of a vigorous rub-down, has a definite value to both human beings and horses after exercise. Lacking any further addition of lactic acid, the changes thus induced in the local blood supply permit, presumably, a more rapid removal of that already present.

13. Carrier, E. B.: Studies on Physiology of Capillaries: Reaction of Human Skin Capillaries to Drugs and Other Stimuli, Am. J. Physiol. 61: 528 (Aug.) 1922.

14. Schneider, E. C., and Havens, L. C.: Am. J. Physiol. 36: 380, 1915.

15. Scott, F. H.: Interchange of Fluid in Blood and Tissue Spaces, Am. J. Physiol. 44: 298 (Oct.) 1917.

16. Pemberton, Ralph: Further Observations on Arthritis and Rheumatoid Conditions, Am. J. M. Sc. 166: 833 (Dec.) 1923.

### CONCLUSIONS

1. Massage of voluntary muscles, even though vigorous, is not accompanied by the evidences of lactic acid production and acidosis, which accompany relatively mild active exercise of short duration, or by the evidences of loss of acid and alkalosis, which follow exposure of the body to external heat.

2. Massage can be used as a partial substitute for active exercise in many conditions, but its benefit must be due chiefly to some mechanism other than that reflected in the chemical changes accompanying exercise. The available evidence suggests that these benefits are referable to changes in the circulation, especially capillary.

3. The favorable influences on the rheumatic syndrome of exposure to external heat, massage and active exercise apparently find their chief explanation in their influence on the circulation, including the capillary beds. The corollary to this is that a disturbance of the circulation constitutes part of the underlying pathologic change in rheumatic and arthritic conditions.

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## THE SYMPTOMATOLOGY OF MEASLES MODIFIED BY LATE SERUM IMMUNIZATION *

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Sufficient data have been accumulated on the serum prophylaxis of measles for us to know that when a sufficient amount of convalescent serum is injected within the first five days after exposure, we have in this method a fairly certain means of prevention, which fails in only a small percentage of the cases. Insufficient attention has been given, however, to the effect of the injection of serum late in the incubation period on the subsequent attack of the disease, and to the advisability and indications for adopting such a course.

In a fairly large series of immunizations, to be reported later, I have had opportunity to judge of the great prophylactic value of the serum. My purpose in the present paper is to call attention to the type of

* From the Kingston Avenue Hospital, of the Bureau of Hospitals, Department of Health, New York City, Dr. Frank J. Monaghan, commissioner of Health; Dr. Shirley Wynne, director, and Dr. Donald D. Campbell, physician in charge.

modified measles induced by late serum immunization, in regard to the alterations induced on the characteristic symptom complex, course and complications of this infection, and to take up then the question of the advisability of inducing this form of the disease. Debré and Ravina [1] have especially studied this peculiar type of measles and have favored its induction as compared with prophylactic immunization. Zingher [2] has also recently called attention to it, in his general study on convalescent measles serum as a prophylactic.

TABLE 1.—*Relation of Time of Injection to the Number Developing Measles*

| Date of Exposure Convalescent Serum Injected | Number of Cases | Amount of Serum C.c. | Number of Cases Developing Measles |
|---|---|---|---|
| Sixth day (January 21) | 12 | 8 | 7 |
| Ninth day (January 24) | 7 | 10 | 4 |
| Twelfth day (January 27) | 4 | 10 | 4 |
| Total | 23 | | 15* |

*Excluding the four patients injected after symptoms had appeared.

The cases that were studied in our series comprised the patients in two separate open wards in a diphtheria pavilion, exposed to the same patient, who was moved from one ward to another shortly after her admission.

In Ward 4 A there were fifteen patients, with acute pharyngeal or laryngeal diphtheria. Of these, nine had never had measles. A patient in the preeruptive period of measles was admitted as a croup case to this ward, January 15. She remained in the ward six hours, and was then moved to Ward 4 B, where there were thirty-two patients, eighteen of whom were susceptible. She remained in this ward twenty-six hours, but her bed was behind a glass cubicle.

A total, then, of forty-seven patients were exposed, of whom twenty-seven were susceptible. Of the twenty-seven, nineteen developed measles; four of these patients, however, had been given their convalescent serum only after the appearance of symptoms. In other words, fifteen patients were injected during the incubation period and four during the invasion period of the disease.

The convalescent serum used was obtained from five different patients, aged 14, 18, 20, 21 and 22 years. A mixed serum from at least two or three of these donors was given at each immunization. This serum was obtained on the fifth, seventh and eighth day of convalescence.

TABLE 2.—*Relation of Time Elapsing After Serum Was Injected to Patients Developing Measles*

| | | | |
|---|---|---|---|
| 2 days after | 1 | 7 days after | 2 |
| 4 days after | 2 | 9 days after | 1 |
| 5 days after | 2 | 13 days after | 3 |
| 6 days after | 3 | 18 days after | 2 |

## RESULTS OF OBSERVATIONS

*Effect of Serum on the Disease When Given in the Invasion Period.*—In the four patients injected at this time, in one the serum was administered two days after the onset, in two one day after the initial symptoms, and in the remaining patient on the same day. All of these patients received 10 c.c. of serum by the intramuscular route, and one in addition 5 c.c. intravenously. The serum seemed to have a slight effect on the course of the disease, especially when given intravenously, by modifying the severity; but it did not influence any of the characteristic symptoms.

*Influence of the Convalescent Serum on the Course of the Disease When Injected Late in the Incubation.*—This phase was particularly interesting, and almost all the patients injected prior to the development of symptoms presented in varying degrees modification of the symptom complex that is considered characteristic of measles.

These changes may be divided according to the period of the disease in which they were presented.

Changes in the Incubation Period: It is quite remarkable that six patients, almost half of the fifteen, had an incubation of eighteen days or longer. In one it reached twenty-two days after exposure, and in four, the twenty-fourth day. Incubation periods of more than twenty-one days are unknown in measles uninfluenced by immunization.

Changes in Invasion Period: Duration. The duration of the invasion was materially shortened in six patients. In two it was lacking entirely, in two it lasted only one day, and in two other patients only two days. In one child it was prolonged for six days, during the first four of which only a rise of temperature without any characteristic symptoms was present. The average invasion period in cyclic measles is about three days.

TABLE 3.—*Date After Exposure on Which Immunized Patients Developed Measles*

| | | | |
|---|---|---|---|
| In 11 days | 2 | In 15 days | 1 |
| In 12 days | 1 | In 18 days | 1 |
| In 13 days | 4 | In 22 days | 1 |
| In 14 days | 1 | In 24 days | 4 |

Coryza. This symptom showed a marked influence. In six patients, no coryza was noticed, while in eight of the nine remaining, it was very slight.

Koplik's spots. In eight patients, these spots were entirely lacking. Of the seven remaining children, they were decidedly abortive in two, and atypical in five. In measles, the usual incidence of Koplik's spots ranges between 90 and 100 per cent. In several patients, as the Koplik spots faded they left a petechial or ecchymotic area on the buccal mucous membrane.

The enanthem. In six patients there was practically no change in the appearance of the faucial mucosa and soft palate, while in nine others there were mild congestive changes. In only a few was a macular eruption noted on the soft palate. The initial enanthem is a fairly constant symptom in measles, and is well developed as a rule.

Prodromal rash. In four patients, an eruption appeared in the invasion which might be considered as a prodromal rash. In two it was macular in type, in one maculopapular, and in one rather punctate. In one of the patients it was limited to the face.

Changes in the Eruptive Period: The eruption. The eruption, while altered in some cases, remained more characteristic than any of the other cardinal symptoms. It was typical in six, almost typical in four, scant in two, limited to a very small number of lesions in two, and absent in one. In three patients the rash was limited to the trunk of the body. In most patients the rash lasted the average duration of three or four days before it began to fade; but then in eleven of the fourteen cases

1. Debré, R., and Ravina, J.: Bull. et mém. Soc. méd. d. hôp. de Paris 47:226 (Feb. 9) 1923.
2. Zingher, Abraham: Convalescent Whole Blood, Plasma and Serum in Prophylaxis of Measles, J. A. M. A. 83:1181 (April 12) 1924.

the lesions became ecchymotic. In many, this change was decidedly pronounced.

The temperature. The highest temperature in five patients was between 101 and 102 F., and in five others between 102 and 103. The elevated temperature was prolonged from five to ten days in ten patients, in seven of these lasting eight days or more. As a rule, the temperature curve was lower.

Constitutional reactions other than fever. The constitutional symptoms were much milder than in nonimmunized children. In fact, a decided constitutional reaction was lacking, with the exception of one day or two at the height of the disease. Perhaps as the rash was at its height the children would be a little drowsy and present malaise and loss of appetite.

Complications. Among the fifteen cases of modified measles studied, only one patient developed a complication that was an acute otitis media.

### COMMENT

When this relatively mild disease, which follows the injection of measles convalescent serum administered late in the incubation period, is considered, the question that at once occurs to one is whether it is best to use this new prophylactic measure only as a preventive given early (from one to five days) after the exposure as we are now doing as a routine, obtaining thus a transient passive immunity, or whether it should be given given later (on the sixth or seventh day) after exposure in order to obtain a permanent immunity by a modified measles, apparently free of serious symptoms and complications. This is the point of view recently held by Debré and Ravina.

The problem of the supply of serum for all exposures has certainly an important bearing in this matter, as has also the character of the immunity conferred by an immunizing injection early in the incubation of the disease. Most authors believe that this is passive; but Degkwitz[1] thinks it may also possess an active character, and even asserts that the blood of patients immunized is effective in prophylaxis even though they have never presented any symptoms of measles. This has certainly not been proved as yet, and it must be remembered that we have a number of instances recorded already of patients who have developed measles after a varying interval from the time of their immunization, suggesting its passive character. The supply of serum is certainly limited at present, owing to the small number of available immune and willing donors of a suitable age and desirable physical condition. Normal serum apparently does not possess anywhere near the same immunization value.

It must not be forgotten also that, while a patient may be exposed and the exposure known of on one occasion, in the next instance the same child may develop measles after an unknown exposure. In the former instance, if we only passively immunize and the protection has disappeared by the next exposure, he may well have a typical attack, owing to our lack of knowledge of the fact that exposure has occurred. If we had immunized him late in the incubation in the first place, he might then have been rendered immune by a modified measles.

To speak more decisively on this question of prophylaxis versus modified measles there must be accumulated a sufficient amount of statistical data on the late injection of serum between the sixth and the eighth day of the disease, showing the results obtained, the best dosage to employ, the route for administration and the day the injection is best given, to insure that the disease will be as mild as possible. Therefore, all such cases should be carefully studied and reported.

My view in the matter is that with the exception of children under 2 years and older children convalescent from debilitating illnesses, and possibly with the exception of cases occurring in institutions, the late immunizations of susceptibles between the sixth and the seventh day after exposure is by far the more logical.

Some investigators do not seem to favor immunization if the exposure is six days or over, and many apparently feel that healthy children over 4 years that are exposed do not require immunization. Both these views are certainly open to question, provided the supply of serum is ample at the time. It would appear that, if sufficient serum is available, an attempt to modify the disease should always be made in an exposed child up to the tenth day of the incubation at least. It must not be forgotten that there is some mortality and severe complications at times in children over the fourth year of age and even in large aggregations of adults, as was seen in the army cantonments during the World War.

### SUMMARY

In a series of fifteen children with modified measles, the disease was altered as follows:

1. The incubation showed a definite tendency to be longer. 2. The invasion was shortened. 3. The coryza was either absent or mild in degree. 4. Koplik's spots were usually absent, or were atypical in evolution. 5. The enanthem was lacking. 6. Prodromal rashes occurred with greater frequency. 7. The eruption was altered either in being scant or atypical, and in most instances by becoming ecchymotic as it faded. 8. The temperature curve was distinctly lower. 9. The constitutional reaction was decidedly less pronounced. 10. Complications were practically lacking.

### CONCLUSIONS

Measles convalescent serum, administered late in the incubation period between the sixth and the ninth day, and in dosage of from 8 to 10 c.c., has the property of inducing a modified measles, which presents marked alterations in symptoms, being characterized by the mildness of the symptoms, the lack of complications and the shortened duration of the disease. Therefore the question of the advisability of giving serum late to induce this form of the disease is to be considered, and the following facts favor such a course:

1. The exposure may be known in one instance but unknown in the next. 2. The immunity conferred by an injection early in the incubation is probably entirely passive in type. 3. The supply of serum is too limited for repeated immunizations of the same child.

I believe that, with the exception of institutional cases and of children under 2 years of age, or older patients suffering from debilitating diseases, the late immunization of susceptibles is by far the more logical.

1. Degkwitz, R.: Ztschr. f. Kinderh. 27:171, 1920; 28:134 (May) 1920; Deutsch. med. Wchnschr. 48:26 (Jan. 5) 1922.

**Cancer Statistics.**—According to a report by the consulting statistician of the Prudential Insurance Company, the cancer death rate during 1923 in twenty-three cities with an aggregate population of 20,839,737, was 108.5 per hundred thousand. Springfield, Ill., had the highest death rate from the disease, 169.4 per hundred thousand, and San Francisco was second with a death rate of 156.3. The lowest death rate among the cities recorded, it was stated, was that of Norfolk, Va., which reported a death rate from cancer of 54.9 per hundred thousand.

# Clinical Notes, Suggestions, and New Instruments

## A HELPFUL SIGN IN THE DIAGNOSIS OF APPENDICITIS

A. L. Sobesi, M.D., New York
Visiting Surgeon, Greenpoint Hospital, Brooklyn

The sign here described as of value in diagnosing appendicitis, although found most reliable, does not exclude the necessity of a thorough examination. Briefly, one should not palpate the abdomen around McBurney's point. The patient flexes the thighs. The hand is applied to the region of the hepatic flexure of the colon. While the patient breathes as deeply as possible, the hand is pressed very gently under the costal margin. The patient is told to cough, and is then asked whether any pain is felt; the answer may be yes or no. When it is "yes," the patient, on being asked where the pain is felt, without hesitation will indicate McBurney's point when a true appendicitis is present. In acute cases it will be unnecessary to ask the patient whether pain is felt. The patient will eagerly and spontaneously say: "It hurts me here," indicating McBurney's point. When the case is not one of appendicitis, the patient either does not report any pain or refers to pain felt in the region compressed by the hand or elsewhere, not to McBurney's point.

This sign is elicited through gentle pressure on the appendical region by the gas contained in the intestine, when the patient coughs, while the hand of the surgeon compresses the colon, and by the pressure of the contracting abdominal muscles. However, in the sign described, two other important elements enter which make it most reliable. One element is the muscular contraction of the right rectus, which will cause pulling on its lower attachment, when the patient coughs, while the hand of the surgeon presses on its upper portion and holds it steady. The other element is a psychic one. The patient involuntarily tells the truth. Not knowing why the surgeon presses his hand under the costal margin and asks him to cough, naturally the patient expects to feel pain, if there is any pain, at the point pressed on by the surgeon, and not so far away. The patient will say that he feels pain in McBurney's region only when pain is actually felt and not when he imagines or fears that he should feel pain at that point.

58 West Fifty-Eighth Street.

## INFANTILE PARALYSIS IN ELDERLY PERSONS

A. L. Hall, M.D., Fulton, N. Y.

July 17, 1924, P. Q., a man, aged 80, of good habits and previous good health, was taken with a severe headache and some nausea, accompanied by chilliness, fever, sore throat, stiffness of the neck and upper dorsal region, difficulty in swallowing and systemic weakness. He was unable to stand. He was ailing for about three days before taking to bed.

The next day, I was called to attend him and noted the following symptoms in addition to those given:

The temperature was 103.5 F.; the pulse, 116, and the respiration, 30. The patient was very nervous and apprehensive; the eyes were glassy and staring; he was unable to swallow food or liquids; there was extreme rigidity of the neck and upper dorsal spine, with marked tenderness over these regions; the throat was sore, the mucous membrane being moderately congested and slightly swollen and indicative of a relaxed state of the throat structures rather than of acute inflammatory action; there were numerous small swollen glands in the cervical region; there was muscular tremor of face and upper extremities; he sat erect in bed, owing to a sense of suffocation and a fear that he might choke to death; the patellar reflexes were diminished; the throat reflexes were not easily excited, and there had been obstinate constipation for several days. For the next three days these symptoms persisted, and he could not be induced to take any food or swallow liquids. The temperature dropped slowly and on the fifth day became normal, although the pulse and respiration rates were higher than usual.

Recovery was slow, the patient being confined to bed for three weeks. He has gradually improved in general strength; the tonicity of the lower extremities is increased, the patellar reflexes being now normal, but some leg weakness is evident. The throat reflexes are nearly normal, and he can easily swallow solid food; but liquids are still swallowed with some difficulty. He has never presented any evidences of organic paralysis, recent or remote, nor is there any history of previous motor impairment, and, apparently, his difficulty in swallowing and other related symptoms were due to an acute systemic infection which I was unable satisfactorily to diagnose. However, several times, while in attendance, I remarked to the patient and members of the family that if he were not so old, I should unhesitatingly say that he had infantile paralysis. Within the last month, I have several times had my attention called to other cases presenting many symptoms similar to those of the case recited, occurring in elderly persons, but lacking the severity of this one.

In the locality in which I reside, there appears to be a growing popular belief that many cases of poliomyelitis of a very mild character do occur in elderly persons, which are usually unrecognized and which may account for the mysterious spread of the disease.

## PALPATION HEMATURIA AS A TEST IN FLOATING KIDNEY*

Morris H. Kahn, M.D., New York

In examining cases of nephroptosis, I wanted to ascertain whether palpation of the kidney and the pressure incident to it were of any direct injury to the organ; also, when it was desired to identify the kidney from other palpable masses in the abdomen, whether, by producing hematuria by pressure, the identification could be made.

I therefore took a series of cases and, after having the patient void, I proceeded with the routine physical examination. I palpated one or both kidneys, exerting only mild pressure during three inspirations of the patient. After a few minutes, I had the patient void again for a comparable microscopic examination. I have thus obtained data from numerous cases, in some of which I have confirmed this finding repeatedly.

In many cases of nephroptosis in which the kidney could be held down by the palpating hand for several inspirations, bleeding was produced by palpation trauma. In a few cases, when only the lower part of the kidney was palpable, this was not possible.

### CONCLUSIONS

1. The kidneys are apparently sufficiently sensitive to direct pressure or palpation trauma that care should be taken not to induce microscopic hematuria.
2. The urine should be examined before the physical examination is made, before the kidneys are palpated.
3. A mistaken diagnosis of hematuria may result from neglect of this suggestion.

140 West Sixty-Ninth Street.

## EFFECT OF EPINEPHRIN ON THE HEART

W. J. Woolston, M.D., and R. C. Crain, M.D., Chicago

Several cases have been reported showing the effect of intracardial injections of epinephrin. The following case is interesting because of the apparent complete cessation of respiration and circulation for more than a quarter of an hour.

M. J., a colored woman, aged 28, with a diagnosis of chronic salpingitis, was sent in for an operation on the service of Dr. W. J. Woolston, at the Cook County Hospital.

A visiting physician of wide experience administered caudal anesthesia, consisting of procain, epinephrin, hydrochloric

* From the Department of Cardiovascular Diseases, Beth Israel Hospital.

acid and potassium bicarbonate, in solution. From two to three minutes after injection, respirations and circulation apparently ceased. The pupils were dilated and did not respond to light. Artificial respirations were started, and at the end of eighteen minutes, there was no change. Then 1 c.c. of epinephrin solution, 1:1,000, was injected into the heart. Circulation began almost immediately; the pulse was bounding and rapid. Two minutes later, respirations were resumed, somewhat irregularly. This was followed in twelve minutes by a convulsion, tonic and clonic, involving the left side.

The following day the patient was comatose, and there was spasticity of the left arm and leg. The condition lasted two days, after which consciousness returned; but she was unable to recognize persons and seemed to be confused. After one week there was marked improvement, and cerebration appeared normal. Twenty-seven days after entering the hospital, she was discharged with a slight paresis and spasticity of the left upper extremity.

A neurologic examination of the patient two months later revealed a slight hyperesthesia of the left upper extremity. She stated that two or three times a week she had dizzy spells, accompanied by frontal headaches, usually lasting about one hour.

From this experience, we believe that in acute cases of cardiac and respiratory failure we are justified in resorting to an intracardial injection of epinephrin.

## A CASE OF ANDROGYNOUS PSEUDOHERMAPHRODISM

FREDERICK CHRISTOPHER, M.D., WINNETKA, ILL.
Assistant Surgeon, St. Luke's Hospital, Chicago; Junior Surgeon, Evanston Hospital, Evanston, Ill.; Assistant in Surgery, University of Illinois Medical School

S. S., a high school student, aged 17, was first brought to me for a fracture of the clavicle. In the course of treatment for this injury, the mother informed me that the child had never menstruated, and requested that I investigate the cause of this trouble and suggest treatment.

Examination showed the hymen to be perforate and the vagina of normal size, but no uterus could be palpated. This finding was confirmed by Dr. H. O. Jones, who saw the patient in consultation. The external genitalia were somewhat smaller than normal, and the growth of hair was perhaps less than usual. The patient was well developed; the shoulders were somewhat angular, but the breasts were very large and well developed. The patient had a quiet voice, and gave the impression of a most refined and retiring girl.

The mother told me that when the child was less than 2 years old an operation was done in England for double rupture, and she requested that I write to see whether any particulars could be obtained. The answer to my letter was as follows:

"The patient was admitted to the London Hospital in August, 1909. On admission, there was a large right inguinal hernia which had been present since birth, and a small left femoral hernia, which made its appearance six months before admission. An operation was performed by Mr. Dean, consisting of: 1. A left femoral herniotomy. The sac contained a testis and epididymis. This was transfixed, ligated and removed. 2. A right inguinal herniotomy. The sac also contained a testis, *which was returned to the abdomen* [italics mine]. After convalescence, the patient was again examined. It was noted that the vagina was well formed, as also was the clitoris, but no uterus could be detected by rectal examination."

In view of the unlikelihood of the patient's possessing ovaries also, it was felt that "she" must be classed as a partly castrated male with abnormal female genitalia; in other words, an androgynous pseudohermaphrodite.

The mother informed me that the child enjoys the company of boys and is attracted by them. The question of the proper advice to give the family is a difficult one. Should the child become aware of her true condition or should she realize that her parents know something dreadful about her which they keep to themselves, the development of a psychosis might not be unlikely.

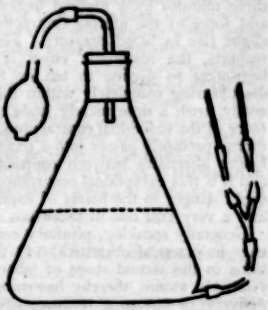
On the other hand, complete ignorance of the situation might lead to a disastrous marriage. The child was informed that she was so built that she could never have children, and the mother was warned that in case of impending marriage the prospective groom should be fully acquainted of this inability to bear children. Moreover, after careful consideration and consultation, the mother was fully acquainted with the daughter's actual condition.

525 Lincoln Avenue.

## AN APPARATUS FOR THE INFUSION OF PHYSIOLOGIC SODIUM CHLORID SOLUTION

WILLIAM H. BYFORD, M.D., CHICAGO
Junior Surgeon, St. Luke's Hospital

It is a usual experience to have a great deal of trouble in the common matter of the infusion of physiologic sodium chlorid solution. The gravity method in common use, an inverted flask with one glass tube to let the air in and a second to let the solution out, is subject to various accidents, particularly when an inexperienced person holds the flask. Not uncommonly the stopper comes out, spilling the contents over whatever is beneath, wasting time and perhaps sacrificing what chance there may be of benefit to the patient. Again, a long rubber tube is needed to give sufficient weight to the column of water for it to force itself into the tissues. This long tube is subject to leaks, loose connections and accidental jerks. Furthermore, two persons are needed, one to hold the flask and the other to use the needles. The flow is of necessity slow in intravenous administration on account of the small needle and the low pressure.



Apparatus for infusion of physiologic sodium chlorid solution.

The method here described has been used at St. Luke's Hospital, Chicago, and been found to be more simple and uniformly successful than the gravity method. It employs an apparatus similar to the one for the transfusion of blood that I[1] described in 1922. The illustration is self-explanatory. An ordinary Ehrlemeyer flask has a nipple blown on the bottom, at a point just high enough to clear the table. To this is attached the ordinary type tubing and needles, two for subcutaneous and one for intravenous administration. The flask is set on a bedside table, the stopper taken out and the solution put in. The stopper is replaced, the tubes are cleared of air, the needles are inserted, and the solution is run in. The air pressure is made by a bulb such as is used on a blood pressure apparatus.

This method has the following advantages over the gravity method:

1. The entire apparatus may be sterilized already set up.
2. The solution is run in under air pressure, which may be regulated to suit the operator.
3. The tubes may be easily cleared of air by elevating the needles and forcing the solution up into them.
4. The tubes are short and not in danger of being accidentally torn loose from their connections.
5. It is almost impossible to spill the solution.
6. It may be given by one person.

30 North Michigan Avenue.

1. Byford, W. H.: A Simplified Apparatus for the Transfusion of Blood by the Citrate Method, Surg., Gynec. & Obst. 35:229 (Aug.) 1922.

## Special Article

### GLANDULAR THERAPY

# THE USE OF EXTRACTS OF THE PITUITARY GLAND IN OBSTETRICS *

J. WHITRIDGE WILLIAMS, M.D.
BALTIMORE

Following the demonstration by Blair Bell and by Hofbauer that extracts of the posterior portion of the hypophysis stimulate uterine contractions in women, the use of such preparations soon became popularized and now has reached such proportions as to constitute a distinct danger.

Clinical experience teaches that the hypodermic injection of from 0.5 to 1 c.c. of an efficient pituitary extract into a woman in labor is followed within two or three minutes by a marked increase in the frequency and force of the uterine contractions, as well as by a slight rise in blood pressure. Fortunately, in certain respects, the maximum effect is of short duration, beginning to decline in ten or fifteen minutes, and disappearing completely within thirty minutes. Ordinarily, such a dose merely leads to an increase in the force of the individual contractions, but occasionally the uterus promptly passes into a tetanic condition, and no longer alternates between contraction and relaxation; and it is this exceptional occurrence which constitutes a slight danger in the hands of experienced obstetricians and a very real one in those less well trained.

Generally speaking, pituitary extract has three main uses in practical obstetrics: (1) to stimulate contractions in the second stage of labor when the uterus is relatively atonic, thereby hastening the completion of delivery, or obviating the necessity for the application of forceps; (2) to control atonic hemorrhage following the extrusion of the placenta, and (3) to induce labor during the last weeks of pregnancy.

Each of these indications will be considered very briefly.

1. In the absence of disproportion between the size of the pelvis and that of the fetus, and when the presentation is normal, the employment of pituitary extract serves a useful purpose after the cervix has become fully dilated and the obstacle to prompt delivery is due solely to deficient uterine action. In such circumstances, the administration of the dose mentioned above is promptly followed by marked improvement in the force of the uterine contractions, which in many instances leads to a prompt and spontaneous termination of labor. Generally speaking, its employment is indicated in two types of cases; namely, multiparous women presenting uterine atony after the cervix has become fully dilated with the head high in the birth canal, and primiparous women in whom the head has reached the pelvic floor and requires only a few strong contractions for its extrusion. In the former, the employment of pituitary extract may obviate the necessity for high forceps or version and extraction, and in the latter for low forceps.

Even in such favorable circumstances, however, it is not devoid of danger; for, as has already been mentioned, the uterus occasionally goes into tetanic contraction, which results in such interference with the uteroplacental circulation as to lead to asphyxiation of the child, which can then be saved only by prompt delivery with forceps. For this reason, I have practically abandoned the employment of pituitary extract in the second stage of labor, and resort to operative delivery instead. On the other hand, if it is administered in the presence of disproportion or of an abnormal presentation, the patient is placed in great jeopardy; for, if the obstacle cannot readily be overcome, and the extract is efficient, rupture of the uterus may occur, with certain death for the child and for the mother as well, unless laparotomy is promptly resorted to. That this danger is not imaginary is shown by the accumulation of an abundant literature concerning the accident, as well as by my own experience. Consequently, pituitary extract is likely to do more harm than good in the hands of inexperienced persons, and from what I know of it is more likely to prove a curse than a blessing in the treatment of prolonged labor.

2. On the other hand, it is invaluable in the treatment of atonic hemorrhage following the third stage of labor. In such cases, its hypodermic injection is promptly followed by vigorous contraction of the uterus, which within a few minutes becomes converted from a flabby, atonic organ into one presenting the consistency of a baseball. Here, again, its action is evanescent, so that when its employment is indicated it should be followed by the hypodermic injection of a suitable preparation of ergot, which takes effect about the time the action of the pituitary extract begins to weaken.

Many authorities advocate the routine administration of pituitary extract as soon as the placenta has been expelled, as a prophylactic against uterine relaxation and subsequent hemorrhage. There is no objection to such a practice, except the general one that it is usually unwise to exhibit any therapeutic agent unnecessarily. On the other hand, it should never be employed to hasten the expulsion of the placenta, as it may give rise to an hour-glass contraction of the uterus, and thus defeat the purpose for which it was employed.

3. Following the suggestion by Watson of Edinburgh, pituitary extract is now extensively employed for the induction of labor during the last few weeks of pregnancy for any cause, as well as in the occasional instances in which the patient has apparently gone beyond term but the child has not attained unusual proportions. As experience has shown that the preparation has little effect in causing the termination of labor prior to the last month, it is useless for the induction of abortion or of premature labor. Used, however, in conjunction with castor oil and quinin at the time indicated, it is extremely efficacious, and in my hands has given satisfactory results in more than 80 per cent. of the cases.

Watson's technic is as follows:

6 p. m., castor oil, 1 ounce (30 c.c.).
7 p. m., quinin, 10 grains (0.65 gm.).
8 p. m., soapsuds enema.
9 p. m., quinin, 10 grains (0.65 gm.).
12 p. m., quinin, 10 grains (0.65 gm.).

If pains have not supervened by 9 o'clock the next morning, 0.5 c.c. of pituitary extract is administered hypodermically and repeated each half hour until labor sets in, or until six doses have been given. In my experience, so many doses are rarely necessary, as labor usually sets in after the second or third, and occasionally after the first, injection.

* This is the tenth of a series of articles prepared under the auspices of the Council on Pharmacy and Chemistry. When completed, the series will be published in pamphlet form.

One of the great objections to the use of pituitary extract is the lack of satisfactorily standardized preparations. The recent work of Smith and McClosky [1] indicates the greatest variability in the potency of the various commercial extracts, and shows that some are eight times stronger than others. Thus, it may happen that one extract will prove practically inert, while another may act unexpectedly vigorously, and thereby give rise to complications that could not reasonably be expected.

To recapitulate, it may be said that the use of pituitary extract in obstetrics should not be considered as harmless, since we are dealing with an extraordinarily potent agent, which is as yet imperfectly standardized. Generally speaking, I regard as somewhat dubious its use in the treatment of prolonged labor even under the most favorable conditions, and as extraordinarily dangerous in the presence of disproportion or of malposition of the child. Its greatest field of usefulness is in the prevention and control of atonic hemorrhage following the third stage of labor, while it is relatively efficient in the induction of labor during the last weeks of pregnancy.

## VALUE OF PITUITARY GLAND THERAPY

JOSEPH L. MILLER, M.D.
CHICAGO

No attempt will be made to discuss all conditions in which pituitary gland substance has been recommended, but only those in which its value has been proved, or disturbances in which, from a physiologic standpoint, such treatment is indicated.

It has been definitely determined that the polyuria of diabetes insipidus can be controlled by the hypodermic administration of posterior lobe extract. The cure is purely symptomatic and continues only as long as the treatment is administered. There is evidence that similar results may be obtained by applying the solution to the nasal mucosa and, in some cases at least, by rectum; but when given by rectum the effect is very transitory. The administration by mouth is without effect in diabetes insipidus.

An extract of the posterior lobe when administered hypodermically is of value in some forms of flatulence, when not due to obstruction, and in postoperative paralytic ileus. In a rather large experience with the flatulence of pneumonia, on no occasion has any improvement been observed.

Posterior lobe pituitary preparations have been recommended in the treatment of bronchial asthma; but as it causes contraction of unstriated muscle, and, as a spasm of the bronchioles is the important factor in exciting a seizure in asthma, the use of such preparations is contraindicated. Fortunately for the patient, when used for this purpose it has been combined with suprarenal solution.

There has developed recently considerable literature on the value of pituitary substance by mouth in the treatment of "pituitary headache." A review of the literature fails to reveal a headache that justifies this name, except in cases in which a tumor is present. In many reported cases the headache is definitely migrainous in character. Time may show the justification of such a diagnosis; at the present, however, nothing is to be gained by discussing the value of specific treatment.

Acromegaly and gigantism are supposedly due to hyperfunctioning of the anterior lobe of the hypophysis, and, therefore, the use of pituitary gland substance is contraindicated. Reported improvement after pituitary medication can be explained by the not infrequent tendency in this disease for the glandular hyperactivity to cease, or even to pass to a stage of hyposecretion.

Adiposogenital dystrophy, or Fröhlich's syndrome, is thought to be due to hypofunctioning of the anterior lobe of the hypophysis. In addition to the typical cases there is a very large group, certainly atypical, in which the question arises whether the trouble is associated with involvement of the hypophysis. The correctness of the diagnosis in this class can be determined only by necropsy findings, and these are lacking. A review of the literature on the value of the pituitary gland therapy in this entire group is not convincing. In a large number of reported cases, a combined pituitary and thyroid gland therapy has been used and the decrease in obesity may well be due to the thyroid therapy. The argument that the condition is pluriglandular in character may be true. However, from a therapeutic standpoint, if we wish to determine which agent is beneficial, the treatment must be carefully controlled. Each gland substance should be administered separately for an adequate period, and only in case of failure to secure results should a combination be given. In any therapy directed toward lessening obesity, it is important that no change be made in diet or amount of exercise taken. A few patients properly studied and controlled would do much to clarify the question as to the value of pituitary gland therapy in this group of diseases.

1. Smith and McClosky: Bull. 138, Hyg. Lab., U. S. P. H. S., April, 1924.

## *New and Nonofficial Remedies*

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

**SECACORNIN.—Ergotin-Roche.**—A solution of the active principles of ergot in a menstruum consisting of distilled water, glycerin and 7.5 per cent. of alcohol. One cubic centimeter of secacornin corresponds to 4 Gm. of ergot, U. S. P., and is said to be standardized according to the method of Kehrer (*Arch. f. exper. Path. u. Pharmakol.* 80).

*Actions and Uses.*—The same as those of ergot.

*Dosage.*—Five-tenths Cc. (8 minims) is equivalent to 2 Cc. (30 minims) of fluidextract of ergot, U. S. P. It may be given by intramuscular injection in doses of from 0.5 to 1 Cc. (8 to 15 minims).

Manufactured by F. Hoffmann-LaRoche and Co., Basle, Switzerland (The Hoffmann-LaRoche Chemical Works, New York, distributor). No U. S. patent. U. S. trademark 58,830.

Secacornin is prepared from ergot by removing fat by means of benzin or a similar solvent and exhausting by percolation with diluted alcohol. The total percolate is then deprived of its alcohol by distillation in vacuo. The resinous mass which separates after cooling is carefully drained off and the clear filtrate, having been evaporated to the consistency of an extract, is mixed with the vehicle.

Secacornin is a dark brown solution, said to be sterile. It is claimed that it does not deteriorate on keeping.

Secacornin responds to the following identity test: 1.6 Cc. secacornin is mixed with 3 Cc. of distilled water and 3 drops of 10 per cent. ammonia water and shaken out in a separatory funnel with 20 Cc. of ether. After complete separation of the two liquids, the aqueous solution is allowed to flow off, the remaining ether washed with 2 Cc. distilled water and this water likewise carefully separated. After this the ethereal solution is filtered into an Erlenmeyer flask and traces of water removed by the use of anhydrous sodium sulphate. Following this, it is filtered into a small glass dish and cautiously evaporated. The residue is then dissolved in from 1 to 1.5 Cc. ferric chloride-acetic acid (1 drop of solution of ferric chloride with 200 Cc. of acetic acid). To this solution is added with a pipet, cautiously and without mixing, in order to form an understratum, 3 Cc. of pure concentrated sulphuric acid. At the point of contact of the two liquids, a characteristic blue to violet ring forms after a time.

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SATURDAY, NOVEMBER 29, 1924

## PERIODIC PHYSICAL EXAMINATION

If there is any procedure that represents the apotheosis of the application of preventive medicine, it is the periodic physical examination. This is the most efficient method that modern medicine has for determining the ability of the individual human being to continue his life in such a manner that he may reach the age to which the tables of life expectancy indicate he is entitled. It is not surprising, then, that the idea has received the spontaneous and wholehearted approval of all the nonmedical agencies to which it may have been broached. Life insurance companies have recognized the commercial asset embodied in a wholesale adoption by the public of this method of detecting in their incipience some of the chronic diseases that have represented the greatest cost to these concerns. Social health agencies have found that the application on a wide scale of periodic physical examinations will secure a decreasing cost in the care of the indigent sick. Moreover, practically every medical organization has given the extension of periodic examination to the public complete endorsement.

The House of Delegates of the American Medical Association, stimulated particularly by the far-sighted policy of its leaders, was among the first to urge consideration of this problem, and the various councils and bureaus of the Association were empowered several years ago to complete plans for extending the matter to the medical profession and for carrying a systematic campaign of education to the public. As a result, blanks have been prepared on which the results of such examinations may be recorded and compared from year to year. Such blanks already have been issued in thousands, and copies of a small booklet outlining the value of the procedure and the manner in which it is to be carried on have been sent to physicians who desired them.

It is significant that every one concerned in the campaign of education for periodic physical examination and in extending this epoch-making method to the public has realized that it is a matter that depends for its success entirely on the extent to which organized medicine, as represented by the Fellows and members of the American Medical Association in the county and state societies, takes up the work. Practically every scheme for putting the system into effect on an extensive scale has attempted to utilize the machinery of the American Medical Association for this purpose. Such attempts have included not only the work of individual life insurance companies but also that of self-constituted so-called philanthropic corporations, of commercial institutions which planned to conduct examinations as a profit-making scheme, of various medical organizations consisting of groups within the whole of organized medicine, and, finally, of philanthropic health organizations which have a leaning toward "state medicine."

As has been mentioned previously in The Journal, some of the county societies and some of the constituent state associations within the American Medical Association have taken up the campaign for periodic physical examinations in a systematic and intense manner which has yielded noticeable results. On the other hand, a large majority of physicians in the United States do not yet seem to have awakened from the state of apathy that seems to prevail among them in regard to this project. There are not lacking, as has been mentioned, commercial and self-seeking organizations to take up this matter for personal gain and aggrandizement, if the organized medical profession will not recognize its opportunity in promoting this conception to the utmost. The headquarters office of the American Medical Association is ready to cooperate fully with any of the constituent bodies that request such aid. Let us not be found lacking in supplying to the intelligent citizens of our country a service which the progress of medical science and the education of the public have taught them to demand.

## GASTRO-INTESTINAL INHIBITORY REFLEXES

To any one who has followed progress in the study of the alimentary tract, it must be apparent that many possibilities of gastro-intestinal therapy are centered in a better knowledge of the fundamental phenomena of the digestive tube. This is true not only with reference to the secretory and chemical manifestations of alimentation but also of the motor activities and their consequences. Like various other parts of the body, the alimentary tract is subject to influences of a long-distance character. Motor and inhibitory innervation is provided through channels to which stimulation may come from places relatively remote from the locus of intestinal response. Thus, by suitable stimulation of the gustatory end-organs in the mouth, such as many foods provide, inhibition of the tonus and the contractions of the stomach can be brought about. According to Carlson,[1] the actual inhibition is brought about either

1. Carlson, A. J.: Contributions to the Physiology of the Stomach, III, The Contractions of the Empty Stomach Inhibited Reflexly from the Mouth, Am. J. Physiol. 31:212, 1913.

by a complete reflex through the inhibitory fibers in the splanchnic nerves and the vagi, or else by inhibition of the vagus tonus through action on the lower brain centers. It is a familiar fact that appetite may be augmented by tasting palatable foods, whereas hunger and its attendant stomach contractions are inhibited thereby. In view of this, Carlson has expressed the often quoted opinion that hunger has reached its biologic end as a motor stimulus when the foods reach the mouth, and at that stage appetite takes the place of hunger as the guide to the quantity of foods to be ingested.

The demonstrated influence of stimulation of sensory nerves by chemical or mechanical means in various localities on the tonus of the cardia may have some practical application. It has been suggested, for example, that bitters or acids in the mouth may reflexly help to inhibit the milder forms of reflex cardiospasm.[2] There are reports of experimental motor effects on the stomach through stimulation of such distant organs as the appendix, the gallbladder and the duodenum; and in the clinic, motor changes have been associated with pathologic conditions of these organs. Consequently, they may constitute possible foci of reflex gastric hypermotility.[3]

There are now equally cogent evidences that the tonus and motility of other parts of the intestinal tract are reflexly affected by impulses originating in distant parts of the body. King[4] of the Vanderbilt University Medical Department has demonstrated that impulses from the urinary tract, rectum, peritoneum and certain skin areas reflexly diminish the tonus and movements of the small intestine. The splanchnics contain the efferent paths for these reflexes. Although King's observations suggest that the predominating effect is inhibitory, it cannot yet be said that stimuli arising from these points never augment intestinal activity, because the conditions under which the experiments were done were in the majority of cases somewhat artificial. The feature deserving emphasis here, however, is that the intestine appears to respond in a manner analogous to that of the stomach.

Surgeons as well as laboratory workers are familiar with the relative quiescence of the gastro-intestinal tract after the abdomen has been opened. Some types of enterospasm disappear under such conditions. There are phenomena much closer to the experiences of everyday life, however, that seem to be in harmony with the doctrine of the reflex interrelations between the intestine and distant organs. From the clinician's standpoint, King has reminded us of the chain of gastro-intestinal symptoms associated with pelvic disturbances, with rectal irritations, and with irritations of the bladder and urethra. He has cited the common teaching that in many cases hemorrhoids develop as the result of constipation; and it is well known that constipation is commonly associated with them. King's studies suggest that after the tumors are formed, the constant irritation due to them may tend to establish a vicious cycle. The newer consideration of the intestinal inhibitory reflexes is well worth while from the standpoint of its clinical bearings alone.

2. Carlson, A. J.; Boyd, T. E., and Pearcy, J. F.: Studies on the Visceral Sensory Nervous System, XIV, The Reflex Control of the Cardia and Lower Esophagus in Mammals, Arch. Int. Med. 30: 409 (Oct.) 1922.

3. Barber, W. H., and Stewart, G. D.: Further Observations on Reflex Gastric Hypermotility, Proc. Soc. Exper. Biol. & Med. 17: 153 (April 21) 1920.

4. King, C. E.: Studies on Intestinal Inhibitory Reflexes, Am. J. Physiol. 70: 183 (Sept.) 1924.

## THE MEDICAL PROBLEMS OF SCHOOL ATTENDANCE

It is commonly assumed that an ever changing variety of incidents, such as the presence of the circus in town, the movies, some athletic event, or even ideal weather for fishing, is what makes truancy one of the conspicuous defects of school life. Fortunately, it may now be said in defense of the maligned youth of our land that truancy is not a large problem. The report of a group of investigators[1] who compiled the causes of absences for the District of Columbia Public School Association shows that in the city of Washington the problem of absences from school is of medical importance to such a degree as to overshadow all needs for disciplinary measures. About three fourths of all absences were due to causes essentially medical in their import. The nature of the illnesses involved is varied in respect to their character and severity. The incidence of the common diseases of children decreases rapidly with age.

According to the government statisticians,[2] of the total population of nearly 106,000,000 persons in the United States in 1920, about 33,000,000, or 21 per cent., were from 5 to 20 years of age. Of the 33,000,000 children of school age, 65 per cent. were actually attending school. Furthermore, the 22,000,000 children attending schools of one kind or another constituted nearly 20 per cent. of the total population of the United States. In the Washington study,[1] it was found that more than one fourth of all absences are because of the common cold, and all respiratory disturbances constitute nearly 40 per cent. of all absences. In another fairly representative American community, a survey of the causes of sickness by the United States Public Health Service[2] also showed that colds were the most common causative factor, both in case frequency of illness and days lost per child. As measured in days lost per child, influenza and measles were next, but the case frequency of headache, the digestive disorders, and tonsillitis and sore throat was greater than that for either influenza or measles.

On the other hand, when the duration of the cases of illness, as measured by school days lost per case,

1. Taylor-Jones, Louise: Causes of Absences in One Grade of Fifteen Public Schools in Washington, D. C., Pub. Health Rep. 39: 2345 (Sept. 12) 1924.

2. Collins, S. D.: Morbidity Among School Children in Hagerstown, Md., Pub. Health Rep. 39: 2391 (Sept. 19) 1924.

is computed for each disease, whooping cough, scarlet fever, pneumonia, diphtheria and measles head the list in the order named. Common colds, the digestive disorders, toothache and headache, some of the most common causes of illness as measured by case frequency, are of minor importance from the standpoint of the number of days lost per case.

Despite their almost daily contacts with the common diseases of childhood, it is probable that physicians rarely realize to what extent, from a statistical standpoint, these maladies actually pervade our communities. On the basis of recent elaborate field investigations in child hygiene,[3] it has been estimated from a survey of more than 30,000 native-born white children that by the time the adult ages were reached, about 89 per cent. of the children had had measles, about 78 per cent. had had whooping cough, 65 per cent. mumps, 52 per cent. chickenpox, 12 per cent. scarlet fever, and 9 per cent. diphtheria. For most of this the children themselves are scarcely accountable. Their school progress is accordingly in no small measure a medical problem deserving of more than the niggardly consideration that it usually receives in the budgets of boards of health or boards of education in American communities.

## THE GORGAS MEMORIAL

When the House of Delegates of the American Medical Association met in St. Louis more than two years ago, and again at San Francisco, there was presented for its endorsement a plan to honor the memory of Surgeon General William C. Gorgas by the establishment of an institute for the prevention and study of tropical diseases. The first plan included the erection of such an institution in Alabama, where Gorgas was born. The promotion of this plan failed. At the Annual Session of the American Medical Association held in Chicago last June, there was presented a new plan for the creation of such a memorial, including on this occasion the erection of a hospital and institute in Panama, the site of General Gorgas' epoch-making contribution to the building of the Panama Canal. In presenting the plan to the House of Delegates, it was suggested that the establishment of such a memorial might also include an extension of the benefits of modern medicine to the people of this country through a systematic scheme of public education. The significant feature of the presentation, however, was a well organized plan of campaign for securing the necessary funds. The matter was referred to a reference committee of the House of Delegates, which reported a resolution to the effect that members of the American Medical Association be urged to give all that they could in the way of money and support to the project. This resolution was adopted.

This week, the executive committee of the Gorgas Memorial is issuing to physicians a definite announcement of the plans, which embody two phases: (1) an institute in Panama for research in tropical diseases, and (2) a health educational program in the United States and other countries that wish to cooperate and participate in the movement. As to the value of the first of these phases there can be no disagreement. No name in the history of preventive medicine is so worthy of honor and perpetuation as that of Gorgas. His character and his leadership of the medical forces of the United States during the World War earned for him the enduring friendship of the thousands of medical officers and civilian physicians who served so capably under his direction. It is well that his memory should be perpetuated by an institute for research in tropical diseases established in a land which was made safe for civilization by his efforts.

The second phase of the plan, however, appears to be a matter for serious thought and careful consideration. The plans seem to include the expenditure of a large amount of money for two primary purposes: (*a*) the education of the public by all the methods available, with special emphasis on the evils of the cults, and (*b*) the promotion of periodic physical examination. Apparently, the money is to be raised through the constituent parts of the American Medical Association, and the work is to be controlled by an organization built up in the individual states, consisting of 75 per cent. of physicians and 25 per cent. of laymen. Furthermore, the control of the organization seems to rest in an individual executive committee with the active control in the hands of the Chicago members of that committee.

The matter was presented to the Board of Trustees of the American Medical Association at a session just held in the headquarters office. After thorough discussion, it seemed to the board that it was not the intention of the House of Delegates to endorse anything more than the first phase of this project, particularly since the second phase was not presented to the House except as a personal suggestion by the chairman of the executive committee of the board of directors of the Gorgas Memorial Institute. Furthermore, it did not seem that the American Medical Association should lend its organization and its endorsement to such a comprehensive plan for the building up of a public health organization entirely outside the bounds and beyond the control of organized medicine without careful and serious consideration by the House of Delegates. Information should be available to the House of Delegates as to the way in which the board of directors of the Gorgas Memorial, apparently responsible only to itself, is constituted, the manner in which the board is perpetuated, and the way in which the American Medical Association is to cooperate, beyond the giving of its organization to the raising of funds and to the promotion of the plan.

3. Collins, S. D.: Past Incidence of Certain Communicable Diseases Among Children, Pub. Health Rep. 39:1553 (June 27) 1924.

# Current Comment

## DENTAL CARIES

The characteristic disintegration of tooth structure commonly known as dental caries is a phenomenon that concerns the physician as well as the dentist. In discussing its etiology, Marshall [1] of the University of California College of Dentistry has asserted that more has been written and less is known of this disease than of any other dental lesion. Nor is it a modern disease, if one may judge by the evidence of caries in ancient skulls. To state that structural defects in teeth may constitute a predisposing factor in caries does not illuminate the problem very much. The theory of etiology most widely heralded has been that of bacterial decay. It postulated a detrimental effect following the microbial production of acids in the mouth. Stress has been placed not so much on the occurrence of bacteria in the buccal cavity as on the types of organisms found. Marshall summarizes the current evidence with the statement that bacteria are not the only factors concerned in dental caries. It is known that *B. acidophilus* is demonstrable in every mouth without regard to the presence or absence of caries. Further than that, the acidophilic properties of different strains obtained from carious and noncarious conditions are the same. It appears, therefore, that both the environment and the tooth structure are more important factors than the types or numbers of organisms concerned. The kind of food, fibrous or nonfibrous, the efficient cleansing of tooth surfaces, the general health of the individual, the degree of nutrition—all of these factors, Marshall adds, are concerned in an etiology formerly considered almost exclusively from the bacteriologic standpoint. There is some evidence that endocrine factors may interplay in the reactions leading to proper tooth formation. Like many of the still current speculations regarding the functions of the ductless glands, those relating to the pathology of the teeth can scarcely be regarded as established in any degree. At present the possible influence of dietary factors is receiving prominence. The manifestations of scurvy and rickets, as well as other dietary deficiency disorders, have served to focus attention on the probability of involvement of the teeth along with other organs and tissues when nutrition is impaired. This view is interesting, though by no means firmly justified through established facts. It is important to keep an open mind regarding dental caries. Marshall believes that we may look with interest toward the elaboration of experimental data on the anatomic changes occurring in teeth as a result of deficient diets, and, secondly, on a possible relationship between certain salivary constituents, which either predispose or inhibit the development of dental decay. The insidiousness of the onset of the disease, the difficulties that are frequently experienced in controlling it, and the unknown factors that influence its cessation, all are still matters of conjecture; and until the complete etiology has been worked out, the treatment, in Marshall's judgment, will be one of repair rather than one of prevention. It appears, therefore, that caries is at least a twofold process in which defective structure of enamel and dentin is closely correlated with deficiencies in diet and physiologic abnormalities. Further than that, certain types of bacteria found in the mouth elaborate locally a sufficient amount of acid to decalcify tooth structure and in this manner form cavities. The factors tending toward an arrest of the process, Marshall concludes, have not as yet been recognized.

1. Marshall, J. A.: The Etiology of Dental Caries, Physiol. Rev. 4: 564 (Oct.) 1924.

## PERISTOLIC FUNCTIONS IN INFANTS

In certain cases of gastric upset in infants, characterized by persistent or habitual vomiting, the use of foods that are more concentrated in consistency than is the usual diet of the young infant has proved to be unexpectedly favorable. The possible causes of vomiting in infancy are manifold. It may be a concomitant of pyloric stenosis and of pylorospasm. There may be hyperesthesia of the gastric mucosa or increased irritability of the muscular wall; or, again, in conditions of atony, pressure on the flabby organ may lead to cardiospasm and consequent vomiting. Air swallowing may play a part in the undesirable gastric movements of children who ruminate or regurgitate. Obviously it is not easy, if indeed it is possible, to encompass all these untoward manifestations of abnormal motility of the infant stomach in one category of explanations. At best they have in common the involvement of mechanical functions represented by the muscular contractions of the stomach wall. To explain the frequent benefit of thick cereal feedings, Rogatz [1] has revived interest in the so-called peristolic action of the stomach. This refers to the tonic activity whereby the organ contracts about its contents, giving the stomach a varying volume and shape according to its fulness. This muscular response is contrasted with the peristaltic waves of contraction that normally proceed from the cardia toward the pylorus. According to Rogatz, appropriate foods of thick consistency promote the peristolic response of the stomach, which serves essentially to surround and grasp the food content. As he views it, in a fluid medium this is difficult because of the inherent, elusive nature of fluids, which tend to travel away from the source of pressure. Hence this peristolic effort results in vomiting of the gastric content in some children. If a thick cereal feeding is used in these cases, the stomach is enabled to exert its peristolic effect more successfully. Since less air is swallowed, the stomach content is correspondingly decreased and the organ has a greater surface area to devote to surrounding and grasping its food. In patients who swallow a great deal of air with cereal, as occasionally happens, the muscular action of the stomach merely results in expulsion of the air. At the same time the stomach wall surrounds and retains the thick food, which is less mobile than fluid and offers a welcome resistance to the gastric musculature. Roentgen-ray observations have tended to justify these conclusions. Whether or not the explanations will suffice, the therapy with thickened foods has already found seemingly successful applications.

1. Rogatz, J. L.: The Peristolic Function: Its Practical Significance in Cases of Pylorospasm and Habitual Vomiting, Am. J. Dis. Child. 28: 582 (Nov.) 1924; Roentgen-Ray Studies of Stomach Function, ibid. 28: 52, 69 (July) 1924.

# Association News

## APPOINTMENTS MADE BY BOARD OF TRUSTEES

At a meeting held in the headquarters office of the Association in Chicago, November 20-22, the Board of Trustees of the American Medical Association made the following appointments:

General Manager: OLIN WEST.
Editor of THE JOURNAL: MORRIS FISHBEIN.
Business Manager: WILL C. BRAUN.

## INCREASE IN PRICE OF SPECIAL JOURNALS

Because of the increase in cost of printing and materials embodied in the publication of the special journals issued by the American Medical Association, and because it is desired to enhance still further the quality and scope of these publications, the Board of Trustees has established increases in the prices of the following periodicals:

| | |
|---|---|
| *Archives of Neurology and Psychiatry*, from..... | $6 to $8 |
| *Archives of Dermatology and Syphilology*, from | 6 to 8 |
| *Archives of Surgery*, from..... | 6 to 8 |
| *Quarterly Cumulative Index*, from..... | 6 to 8 |

## ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

The regular Annual Conference of Secretaries of Constituent State Medical Associations was held in Chicago in the building of the American Medical Association, November 21-22. Thirty-seven secretaries of state associations were in attendance in addition to executive secretaries from four states. The editors of twelve state medical journals who are not secretaries were also present at the conference, which was attended by the general officers and Board of Trustees of the Association. The proceedings of this conference will be published in the *American Medical Association Bulletin*, beginning with the December number.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## CALIFORNIA

**Beauty Doctors in Trouble.**—Mrs. Anna B. Stewart, Los Angeles, a "beauty doctor" who, it is said, never attended medical school, was arrested by an agent of the state board of medical examiners, October 18, on a charge of using the title "Dr." without having a license. She was convicted and fined $100 and sentenced to sixty days in jail, the prison sentence being suspended on condition that she stop using the title.——Mrs. Gertrude Steele, Los Angeles, naturopath, who was indicted, October 7, on a charge of manslaughter as a result of her treatments, had not been apprehended, October 30, and is said to have gone to Canada. A suit for $5,000 against Mrs. Steele was filed, October 16, by a victim who alleges she has been permanently disfigured by Mrs. Steele's alterations of her nose. A judgment against "Dr." Steele for $2,790 was given another victim, October 24, whose nose, it is reported, Mrs. Steele permanently disfigured.

**Diploma Mill Ramifications.**—In response to a request from the Jonathan Club, Los Angeles, for the "exact facts" concerning the revocation of Dr. Frank P. Young's license, the secretary of the state board of medical examiners, Dr. Charles B. Pinkham, referred to a few things that appear in the voluminous transcript of the hearing. He said that Frank P. Young is among those indicted last July by the San Francisco County grand jury on a charge of conspiracy in connection with diploma mill frauds and that among the principals in the "mill" is Robert (Reuben) Adcox of St. Louis, with whom Young was in constant communication in disposing of credentials of the defunct Pacific Medical College, of which Frank P. Young was head. In October, 1923, the homes of Adcox and others were raided and a volume of evidence, comprising letters, cancelled checks, etc., was seized. According to testimony at the recent hearing of the board, Adcox had a checking account in the name of the Bio-Chemical Company which, it appears, was a fraudulent concern for the purpose of hiding checking transactions in the purchase of fraudulent credentials. Frank P. Young was duly served with a citation to appear before the board, October 21, but he failed to appear and was represented by an attorney. Among the evidence introduced were cancelled checks drawn on the Vandeventer Trust Company, St. Louis, payable to the order of Dr. Frank P. Young, signed "Bio-Chemical Company by R. Adcox, President." These checks showed that they were paid by a bank in Los Angeles and bear the endorsement "Frank P. Young." There was also introduced a letter on the letterhead of the Jonathan Club, Los Angeles, which was said to have been among other documents seized by the Missouri medical authorities in the raids noted above. It was as follows:

"Dear Bill:

"The MSS. have been sent. I am solicitous that none of these be made of record before state boards nor given to the A. M. A.

"If everything is satisfactory, let me know.

"Dr. Herzfeld of Des Moines, Iowa, may want to come to your school. He is all wool and a yard wide. You can depend on him. He can bring you a number. Will send him to you. Remember the name, ——.P."
(Signed)

Evidence was introduced at the hearing showing that the initial "P" was frequently used in correspondence such as this. Among many other documents introduced at the hearing, written on the letterhead of Dr. Frank P. Young, was the following:

"This is to certify that Andrew Draser graduated from the Pacific Medical College in June, 1917, after having been accredited with sufficient hours' study in medical subjects and a period of four years in accredited schools.
(Signed)
"F. P. Young,
"Dean, Pacific Medical College."

Draser, who now lives in Ventura, testified that he purchased a Pacific Medical College diploma for $150 and that afterward he called on Frank P. Young in the Black Building, Los Angeles. Draser related that he also called on Adcox and paid him $400 and that Adcox took him to call on Waldo Briggs, dean of the St. Louis College of Physicians and Surgeons, who agreed to matriculate Draser in the senior class. Draser further said that Briggs was not satisfied with his high school credentials, which Adcox had furnished, and that he paid Adcox $40 additional for a Terre Haute, Ind., certificate, which was acceptable to Briggs. Draser attended the St. Louis College of Physicians and Surgeons from November, 1920, until about March, 1921, when he returned to California and repurchased his "drugless practice" from a chiropractor named Todd, who thereupon bought a Pacific Medical College diploma, gained matriculation in the St. Louis College of Physicians and Surgeons and graduated in the same 1921 class as did Draser. Among other evidence introduced at the hearing of the state board of medical examiners were thirty-seven statements filed by students at the St. Louis College of Physicians and Surgeons, alleging attendance at the Pacific Medical College, Los Angeles. While it is understood that Frank P. Young failed to appear before Judge Roach in San Francisco, October 22, and that his bail of $5,000 was forfeited, he will nevertheless be expected to appear for trial, December 2.

## ILLINOIS

**Students' Hospital Association.**—It is reported that the Students' Mutual Hospital Association at the University of Illinois has a membership of 4,000. The new hospital building, a gift of a friend of the university for the use of students, is nearing completion. It will have a capacity of 100 and will be turned over to the Students' Hospital Association.

### Chicago

**Dormitory for Professional Students.**—A large dormitory building for professional students is contemplated for the west side of Chicago in the heart of the medical and dental school district. It is to be erected under the auspices of the Y. M. C. A., and, as proposed, will cost $500,000, of which $50,000 has just been raised among the professional students themselves.

**The New School of Medicine on the Midway.**—The units of the new Graduate School of Medicine at the University

of Chicago intended for immediate construction comprise two groups. The Billings Hospital, which will face south on the Midway between Ellis and Drexel avenues, includes the administration building, a clinic for internal medicine and the medical specialties and one for general surgery and surgical specialties. This group will house the Billings Library. The physiology group of buildings, occupied by the departments of physiology, physiologic chemistry, and pharmacology, will be erected on the south side of Fifty-Eighth Street between Ellis and Drexel avenues and will connect with the hospital group. The buildings will be Gothic to harmonize with the other university buildings.

## INDIANA

**Dr. Emerson President Mental Hygiene Committee.**—Dr. Charles P. Emerson, dean, Indiana University School of Medicine, Indianapolis, has been elected president of the National Committee for Mental Hygiene, it is reported, to succeed Dr. William H. Welch, director, School of Hygiene, Johns Hopkins University, Baltimore.

**Damages for Paraffin Injection.**—A jury in superior court, Indianapolis, awarded William A. Trainor $2,250 damages against Dr. C. Roland PerDue, of that city, who operated on Trainor's face, it is reported. Trainor alleged that Dr. PerDue ruined his appearance and health by injecting paraffin into his face, and asked $10,000 damages.

## IOWA

**Physicians Return Prescription Blanks.**—A law became effective, October 28, in Iowa, making it mandatory for the county attorney to notify judges of the district court of physicians who violate federal regulations concerning liquor prescriptions. The judges are then directed to suspend the physician's certificate to practice for one, but not more than two years. In the last few days, according to the state prohibition director, fifty physicians have returned their unused liquor blanks.

## LOUISIANA

**Personal.**—Harley W. Gould, Ph.D., assistant professor of microscopical anatomy in the Tulane University School of Medicine, New Orleans, has been appointed professor of biology in Newcomb College, Tulane University.

**Another Village Prohibits Medicinal Liquor.**—The ordinance in Arcadia which formerly prohibited the sale of intoxicating liquor, except as authorized by federal authority, has recently been amended so that the above exception is removed. This means, it is reported, that druggists can no longer handle intoxicating liquor for medicinal purposes.

## MARYLAND

**Hospitals Opened.**—The new Sydenham Hospital near Lake Montebello for communicable diseases has been opened. It has a capacity of 110 beds. About thirty-five beds are available for private patients. Persons desiring the services of their own physician are allowed to arrange this matter with the superintendent, Dr. Birkhead MacGowan.——The new building of the Baltimore Eye, Ear and Throat Charity Hospital was opened formally, November 17. In addition to operating rooms, there are accommodations for twenty-five private patients and an equal number of ward patients. The hospital was established, in 1882, on Franklin Street. A movement was inaugurated, in 1895, to erect a larger and better appointed hospital.

**Eye Institute for Johns Hopkins.**—Facilities of the Johns Hopkins Hospital and Medical School, Baltimore, are to be increased by the addition of an institute for the study and treatment of diseases of the eye and for research into the causes of blindness. Should plans mature, the institute will be placed under the direction of Dr. William Holland Wilmer, Washington, D. C., and will be named the Wilmer Institute. The Wilmer Foundation is cooperating with Johns Hopkins in financing the institute, which will involve an outlay of $3,000,000. Dr. Wilmer will become professor of ophthalmology in the medical school and ophthalmologist of Johns Hopkins Hospital. The Wilmer Foundation has already $200,000 to contribute to the project, and the present arrangements are to raise the entire amount or a large part of it by January 1. The trustees of Johns Hopkins University have not yet taken final action. It is believed, however, this will not delay the plans for financing the undertaking.

**Personal.**—Dr. Emile Brumpt of the faculty of the University of Paris has been a guest of the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, recently. Dr. Brumpt is making a tour of the medical laboratories of this country.——Dr. F. M. R. Walshe, London, neurologist and an authority on speech defects, will come to Johns Hopkins Medical School, Baltimore, in January. During his stay of several months, Dr. Walshe will be neurologist by courtesy at Johns Hopkins Hospital, and will give lectures on neurology at the medical school. Dr. Walshe is a member of the medical unit, University College Hospital, and physician to outpatients of Queens Square National Hospital, London. This expansion program includes plans for a neurologic clinic, for which funds are being sought.——Dr. H. M. Gram, chief medical officer, health department, Norway; Dr. L. S. Fridericia, professor of hygiene, University of Copenhagen, and Dr. Andreas Diesen, chief of the bureau of sanitation, health department, Christiania, Norway, are in Baltimore to study health activities.

## MASSACHUSETTS

**Headquarters for State Society.**—At the October meeting in Boston of the council, Massachusetts Medical Society, the president, Dr. Enos H. Bigelow, drew attention to the need of a headquarters for the society and its journal. A motion was unanimously passed that the president appoint a committee to consider the matter, that the committee be given authority to add to its membership and to confer with the officers of the Boston Medical Library with reference to establishing headquarters in the library building. The president appointed Drs. James S. Stone, Walter P. Bowers, Thomas J. O'Brien, David N. Blakely, Matthew Vassar Pierce, Carmillus T. Warner, Samuel B. Woodward and Henry Colt. There were 112 councilors at this meeting. The secretary read a letter from the director of the New York University Hall of Fame, asking that the society cooperate in providing a bust of Dr. Oliver Wendell Holmes for the Hall of Fame at a cost of about $3,000. Drs. John W. Bartol, Homer Gage and Edward C. Streeter were appointed a committee to consider obtaining the bust.

**University News.**—Dr. William Einthoven, University of Leyden, Netherlands, gave two lectures under the Edward K. Dunham Lectureship at Harvard University Medical School, Boston, October 21-22, on "The Results of Experiments Performed to Show the Relation of the Mechanical and Electrical Phenomena of Muscular Contraction," and addressed a physiologic conference at Harvard University Medical School, October 29, the subject being "Fine Threads in Physiology."——At a meeting of the Harvard Medical Society, October 28, at the Medical School of Harvard University, Dr. N. D. Royle and Prof. John I. Hunter, both of Sydney, Australia, addressed the meeting on "The Problem of Treatment in Spastic Paralysis."——Prof. S. P. L. Sorensen of the Carlsberg Laboratory, Copenhagen, Denmark, addressed a physiological and biochemical conference at Harvard Medical School, November 14, on "The Carlsberg Institution."——At the November 11 meeting of the Harvard Medical Society at the Peter Bent Brigham Hospital, Boston, Dr. Harvey Cushing spoke on "Western Reserve Medical School" (Historical Note), and Drs. Lester R. Whitaker and Samuel G. Millikan spoke on "Experimental and Clinical Experience with Biliary Cystography."——Prof. Archibald V. Hill, University of London, spoke on "Recovery Process After Muscular Activity" at the Harvard Medical School, November 21.

## MINNESOTA

**Society News.**—At the recent annual meeting of the Minnesota Public Health Association, Dr. Henry L. Taylor, St. Paul, was elected president; Dr. Naboth O. Pearce, Minneapolis, vice president; Mrs. J. A. Thabes, Brainerd, secretary, and W. A. Laidlaw, St. Paul, treasurer.——At the annual meeting of the Minnesota Sanitary Conference, St. Paul, Dr. Oscar E. Locken, Crookston, was elected president; Dr. Daniel C. Lochead, Rochester, vice president, and Dr. Albert J. Chesley, executive officer of the Minnesota State Board of Health, secretary-treasurer.

## MISSOURI

**Society News.**—George E. Vincent, Ph.D., president, Rockefeller Foundation, New York, will speak at the Gatesworth Hotel, St. Louis, Tuesday evening, December 2, at a meeting arranged in connection with an institute in education and recreation in social hygiene. These meetings will be under the auspices of the Missouri Social Hygiene Association, in cooperation with the St. Louis Medical Society, the St. Louis Board of Health and other organizations.

## NEW JERSEY

**Hospital News.**—The Middlesex General Hospital, New Brunswick, will undertake the construction of a $200,000 addition in the near future.——The board of trustees of Englewood Hospital, Englewood, recently let the contract for a $600,000 building.

**Society News.**—At the eighteenth annual meeting of the New Jersey Tuberculosis League, New Brunswick, October 24, Dr. Samuel B. English, superintendent of the New Jersey State Sanatorium, Glen Gardner, was elected president, and Dr. Marcus W. Newcomb, Brown Mills, vice president. Dr. Isaac E. Gluckman, Newark, was elected to the board of directors.

## NEW YORK

**Society News.**—Dr. Woods Hutchinson, Greenwich, Conn., addressed the state committee on tuberculosis and public health, State Charities Aid Association, Syracuse, November 11, on "Making Health Contagious."

**Vassar Opens Hospital Pavilion.**—The new pavilion, containing 100 beds for private and semiprivate patients at the Vassar Hospital, Poughkeepsie, has been opened. The hospital will appeal for $800,000 to provide a permanent income to carry on its work.

**Tetra-Ethyl Lead Recovered from Victim.**—It was announced, November 12, that a half milligram of tetra-ethyl lead had been recovered from the brain of Walter Dymock, a Standard Oil Company employee, who died recently at Elizabeth from the effects of breathing so-called "looney gas." The examination required almost constant work at the chief medical examiner's laboratory since the death occurred, and while not completed, has resulted in finding thus far in various organs a total of 7.2 grains of lead. A variety of lead compounds have been recovered, derivatives of tetra-ethyl lead and presumably the result of the organism's efforts to metabolize the poison.

**Venereal Disease Clinics.**—Under the direction of the local board of health, the village of Herkimer has opened a venereal disease clinic with Dr. J. W. Graves in charge.——At a meeting of the public health committee of Livingston County, it was decided to open a clinic for the treatment of indigent persons who have venereal disease. The committee from the board of supervisors states it is in a position to finance the clinic for six months providing the county committee will secure a site and undertake its operation. This, according to the state department of health, is the first county to open a clinic for the treatment of indigent persons having venereal disease, although about forty cities and towns in the state for the last five years have been conducting such clinics.

### New York City

**Hospital Offered City.**—The city board of estimate is studying an offer to assume charge of the Lincoln Hospital, One Hundred and Forty-First Street and Southern Boulevard. The capacity of the hospital is 252 beds, with additional quarters for seventy-eight aged colored people. It has an endowment of $1,031,613, which supports a training school for colored nurses.

**First Health Examination Dispensary.**—The first health examination dispensary of its kind will be opened soon by the Brooklyn Bureau of Charities, arrangements having been made for removing the health examination service from the Bedford and Gowanus stations to the central dispensary at the Charities Building. The medical staff will be provided from volunteers from various Brooklyn hospitals.

**The United Hospital Fund.**—The United Hospital Fund, which is distributed among fifty-seven nonmunicipal hospitals belonging to the United Hospital Association, has published its annual report for the year ending June 30, 1924. Gifts to the fund and income from endowments totaled $586,587.58. Of those receiving treatment, 714,693 were dispensary patients and 209,903 were bed patients. In all, 1,470,512 days of free treatment were given to those unable to pay; this constituted 46 per cent. of the annual hospital service provided by the institutions in the association.

**Neuropsychiatric Clinics.**—A meeting was recently held at the Hotel Roosevelt to discuss plans for a neurologic hospital and clinic in the Bronx. It will be nonsectarian, costing almost $2,500,000 and providing 350 beds with facilities for a large number of outpatients. The aim of the hospital will be "to prevent persons on the border line from slipping over into the realm of insanity." Persons emotionally unstable will have an opportunity to be treated without court intervention.——The first step was taken, November 10, to secure for Brooklyn a clinic for the treatment of children with behavior problems, when representatives of various hospitals and other organizations met to discuss the maintenance of a neuropsychiatric clinic for children.

**Tuberculosis Conference.**—At the third annual meeting of the New York City Tuberculosis Conference, comprising representatives of twelve organizations working in this field, which met at the Hotel Biltmore, November 20, the following, among others, gave addresses: Dr. William H. Welch, director School of Hygiene and Public Health, Johns Hopkins University, Baltimore, "Milbank Metropolitan Health Demonstration"; Charles E. A. Winslow, professor of public health, Yale University, New Haven, "Industrial Factors Influencing Tuberculosis"; Dr. Livingston Farrand, president Cornell University, "The Public Significance of the Christmas Seal: To the Nation"; Bird S. Coler, commissioner New York City Department of Public Welfare, "New York City's Service in Hospitalizing the Tuberculous Sick."

**Hospital Directors to Be Laymen.**—The New York Post-Graduate Medical School and Hospital announced a departure from the usual procedure in choosing hospital directors. This institution has just completed a reorganization whereby an all-lay board of directors has been chosen. Hereafter no active attending physician of the hospital will be eligible for election. In addition to this lay board there will be a medical board of all the members of the faculty of full professorial rank. The new directorate will formulate the institution's policies in the future and the medical board will carry them out. Dr. James F. McKernon, president of the institution, explains that this step will free the medical board for the work of hospital operation and teaching. Either board will be free to make suggestions to the other. The officers elected for the ensuing year are: president, Dr. James F. McKernon; first vice president, William V. Griffin; second vice president, Edgar H. Boles; treasurer, William Fahnestock; secretary, Robert E. Allen. The dean of the medical school is Dr. William D. Cutter; the superintendent of the hospital is Louis C. Trimble.

**Committee on Illegal Practice.**—Dr. Joseph Golding, chairman of the committee on illegal practice of the Medical Society of the County of Kings, has given the society the following records of convictions of illegal practitioners in Brooklyn:

Filippi—practicing without license—guilty; $500 fine or one hundred days in the workhouse. Paid fine. Six months' workhouse sentence suspended on promise not to practice again.

Julia Ruccione—chiropractor—guilty; $500 fine (paid) or one hundred days in the workhouse. Thirty days' workhouse sentence suspended on promise to dismantle her office.

"Father" Loya—pleaded guilty (no sign on office). Being an old man he was let off with a $50 fine. Paid.

Lillian Edward—chiropractor and head of a School of Naturopathy; $100 fine. Paid.

Sicca—chiropractor. Guilty. Thirty days' jail sentence with no option of a fine. Sentence served.

Sussman—chiropractor. Guilty. Sixty days in the workhouse. Sentence served.

Leo Rothfeld—an alleged M.D. Pleaded guilty. He gave important information concerning illegal practitioners and fake schools, and on motion of the District Attorney, sentence was suspended.

"Father" LaCanera—a very old man. The trial was adjourned indefinitely on his promise to leave the country and to show his tickets and passports to the judges of Special Sessions. He left America.

## NORTH CAROLINA

**Hospital Burned.**—The Thompson Hospital, Lumberton, was completely destroyed by fire, November 12, with a loss of about $40,000.

**Society News.**—The Raleigh Academy of Medicine was entertained at dinner at the home of Dr. Hubert A. Royster in honor of Dr. LeGrand Guerry, Columbia, S. C., president of the Southern Surgical Association.——Dr. Henry A. Christian, professor of medicine, Harvard University Medical School, Boston, conducted a medical clinic at the Presbyterian Hospital, Charlotte, November 12, as guest of the hospital and Mecklenburg County physicians.

**Physicians Arraigned.**—The U. S. District Court took up the trials of five Asheville physicians charged with violating the Harrison Narcotic Act, November 10. It is reported that Drs. James F. Brewer and Garrett D. Gardner pleaded guilty and prayer for judgment was continued in both cases. Dr. George W. Purefoy, indicted on the same charge, was called but failed to appear and a capias was ordered issued. Dr. Ptolmey P. Chambers issued a general denial of the charges and his case was still pending. Dr. Thomas W. Sumner,

Fletcher, it is reported, pleaded guilty to violation of the Harrison Narcotic Law, November 8, and was fined $500. It being his first offense the prison sentence was omitted.

## OHIO

**Smallpox Closes Schools.**—Twenty-two cases of smallpox have been reported from St. Louisville, near Newark. The St. Louisville schools have been closed, and the whole population of Newton township, it is reported, has been exposed to the disease. Four cases have also been reported in Burlington township, not far west of St. Louisville.

**Approved Scarlet Fever Toxin.**—At the annual conference of state health commissioners, Columbus, November 12, a resolution was passed condemning the sale of scarlet fever toxin and antitoxin which has not been approved by the U. S. Public Health Service, it is reported. This action was taken following discussions by Drs. George F. and Gladys Henry Dick.

**Movement to Revise Reorganization Act.**—At the fifth annual conference of Ohio health commissioners, Columbus, November 11, a movement was started to revise the reorganization act, so as to take the appointment of the state director of health out of the hands of the governor and put it back in the hands of a bipartisan board where it was before the enactment of the reorganization act. The governor is said to favor the change.

**Hundreds of Wells Examined.**—A campaign started in November, 1923, to assure safe drinking water at public sources of supply has thus far resulted in the examination of more than 800 wells along the principal roads in Ohio. In the "Seal of Safety" campaign, as it is called, most of the work has been done by engineers of the state health department in cooperation with county health departments. The campaign is progressing in twenty-three counties and will be extended. The National Road across the state has been covered, the "Three C's" from Cleveland to Cincinnati, the Dixie Highway from Cincinnati to Vandalia, and parts of other roads adjacent to these main routes. Automobile clubs are cooperating by furnishing and erecting in territory tributary to their organizations large markers calling attention to tested wells. Examinations are not limited to roads, however, but include public water supplies at colleges, universities, country clubs, hotels and factories. The governor and the state commissioner of health were present at the ceremony of sealing the first well.

## OREGON

**Hospital News.**—A Protestant Episcopal Hospital has been opened at Baker in a two-story building remodeled from a residence.——The Albany General Hospital, Albany, erected and furnished at a cost of about $60,000, was recently opened.

**Society News.**—At the recent meeting of the Eastern Oregon District Medical Society at Bingham Springs, Dr. Wellington P. McAdory, La Grande, was elected president; Dr. John B. Gregory, Wallowa, vice president, and Dr. Carl J. Bartlett, Baker, secretary.

**Personal.**—Dr. E. L. Smythe has resigned from the staff of the U. S. Veterans' Hospital, Portland.——Dr. James A. Best, Pendleton, has resigned as county physician.——Following the resignation of two members of the health service staff of the University of Oregon, Portland, Dr. William Kuykendall has been appointed chief of staff, Dr. Gilson A. Ross, full-time assistant, and Dr. Delbert C. Standard, part-time assistant.

## PENNSYLVANIA

**Personal.**—Dr. Howard G. Schleiter, Pittsburgh, gave a postgraduate lecture on "Cardiac Arrythmias: The Electrocardiograph, Its Value in Practical Medicine," before the Allegheny County Medical Society, November 6.

**Mental Clinic at Huntingdon.**—A mental health clinic has been established in Huntingdon under the auspices of the bureau of mental health, Pennsylvania Department of Welfare. The clinic will be held in the state clinic rooms, 516 Penn Street, the second Friday of the month. Dr. David Philips will be the psychiatrist and Augusta Golster, Ph.D., also of the bureau of mental health, will be the psychologist. Appointments for consultation should be made in advance with the secretary.

**Report of Committee on Conduct of Laboratories.**—The committee of the Medical Society of the State of Pennsylvania, appointed to study conditions, organization and conduct of laboratories in the state, considered its data insufficient to make a complete report at the recent meeting of the society at Reading, but made the following statements and recommendations:

1. That it is opposed to any legislation on the subject at this time.
2. That the subject of medical laboratory diagnosis should be recognized as a specialty in the practice of medicine.
3. That the work of the committee be continued during the coming year and include a questionnaire to every licensed physician in the state to obtain reliable data on which further opinions and recommendations may be based.
4. That the committee be enlarged to contain members of the Medical Society of the State of Pennsylvania who are not specialists in laboratory medicine that the work and recommendations of the committee shall be well balanced and without bias.
5. That in the meantime, in the face of the now too frequent attempts of nonmedically trained persons to diagnose disease by means of laboratory tests alone, and the absence of means of controlling the activities of such persons, the Medical Society of the State of Pennsylvania be asked to pledge its support to those of its members who are engaged in medical laboratory work, in their effort to establish clinical laboratory diagnosis as a recognized medical specialty, and to assist them in their attempts to maintain medical laboratory diagnosis throughout the state upon a high standard of accuracy and efficency.

## Philadelphia

**Dr. Ebaugh Appointed Professor of Psychiatry.**—Dr. Franklin G. Ebaugh, director of the Neuropsychiatric department, Philadelphia General Hospital, has resigned to accept a position as professor of psychiatry, University of Colorado, and director of the Colorado Psychopathic Hospital, Denver. He will begin his new duties December 15.

**Medical Society Endorses Antismoke Ordinance.**—The directors of the Philadelphia County Medical Society went on record, November 10, as demanding the passage of the Lukens ordinance for abatement of the smoke nuisance in Philadelphia. The resolution was unanimously passed and transmitted to the mayor. Organizations in all parts of the city are preparing resolutions urging speedy relief from the smoke nuisance. Philadelphia's example in dealing with what is becoming a national issue is being closely followed in other cities, but thus far there has been no coherent, wide movement to abate the smoke nuisance.

## TENNESSEE

**Dr. Crittenden Resigns.**—Dr. Charles B. Crittenden, Nashville, state commissioner of health, has resigned, it is reported, to accept an appointment as city health commissioner of Chattanooga.

**Society News.**—At an organization meeting, October 22, the Memphis Urological Society was formed, and Dr. George R. Livermore was elected president, Dr. Jerome L. Morgan, vice president, and Dr. Oswald S. McCown, secretary. Application will be made to the American Urological Association for recognition.

**Progress of Reorganization at Vanderbilt.**—In an address before the Vanderbilt Club at the Chamber of Commerce, Nashville, November 12, Dr. G. Canby Robinson, dean-elect of Vanderbilt University Medical Department, stated, it is reported, that it was decided to make no attempt to reorganize the faculty of the Vanderbilt medical school until the building program had been definitely established, but that so far heads of departments had been appointed in biology, chemistry, anatomy, pathology, bacteriology, preventive medicine and general medicine, and that appointments have not as yet been made in physiology, pharmacology, surgery, obstetrics and in the various clinical specialties.

## WASHINGTON

**Hospital News.**—The construction of a $65,000 addition to St. Luke's Hospital, Bellingham, will start about January 1.

**Report of Committee on the Oregon Plan.**—At the annual meeting of the Washington State Medical Association, in August, the committee to investigate the so-called Oregon plan with regard to the relation of the public health league and the state medical association reported that, after an investigation of the plan adopted by Oregon two years ago, they felt sufficient time had elapsed to demonstrate its advantages and disadvantages. Briefly, the plan proposes to raise the dues of the state association to $20, $3 of which would go to the association and $15 to the league. The committee found that about the same plan was endorsed at the last session of the Idaho State Medical Association except that its joint dues were placed at $40. There was some temporary loss of membership after this plan was adopted in Oregon, which the committee believed was due largely to the fact that the league in that state had been hampered by a lack of funds for two years and was without an executive secretary. The officers of the Washington Public Health League reported

that about 60 per cent. of physicians in the state were members of the league. The committee recognized that if there is to be the proper development of activities of the state medical association and of the league, the responsibility for the financial support of these organizations should rest equally on every member of the state society. At present, at least 40 per cent. of the members of the state society pay nothing to support the league, and they benefit equally with those who do. It was moved and carried that the report be filed for action at the next annual session, that its recommendations be placed before the component county societies for their action and that the committee be continued for one year.

## WEST VIRGINIA

**Personal.**—Drs. Samuel H. Burton and George M. Burton have been appointed school examiners for the Weston independent districts.

**Hospital News.**—St. Mary's Hospital, Huntington, a seventy-five bed institution conducted by the Palatine Sisters, was formally opened, November 6.——The new Marshall County Health Sanatorium was formally opened, October 26.——A $200,000 addition will be erected shortly to the Kessler-Hatfield Hospital, Huntington.

## CANADA

**Society News.**—The Vancouver Medical Association published the first issue of its bulletin, October 1. It contains, among other things, the complete program for the year.

**University News.**—At the opening, October 6, of the new Pathologic Institute of McGill University Faculty of Medicine, Montreal, which owes its being in part to the Rockefeller Foundation, New York, the chief address was delivered by Arthur E. Boycott, Graham professor of pathology, University of London. In his opinion, the institute should afford time and opportunity for workers to investigate such phenomena as that named after the young French Canadian, de'Herelle, which, he said, if understood, would amplify our knowledge of life itself. Professor Boycott considers bacteriology a science wider than that covered by the study only of micro-organisms that invade the human body, and that plant bacteria and comparative pathology must be studied also.

## GENERAL

**Dr. Babcock's Anniversary.**—Stephen Moulton Babcock, Ph.D., emeritus professor of agricultural chemistry, University of Wisconsin, Madison (for twenty-six years he was professor of agricultural chemistry), inventor of the Babcock test for determination of butter fat in milk, recently celebrated his eighty-first birthday.

**Society News.**—At the forty-first annual convention of the Tri-States Medical Association (Mississippi, Arkansas and Tennessee), Memphis, November 14, Dr. William H. Anderson, Booneville, Miss., was elected president; Drs. Hugh W. Priddy, Charleston, Miss., Charles P. McCracken, Jonesboro, Ark., and Augustus A. Oliver, Paris, Tenn., vice presidents, and Dr. Arthur F. Cooper, Memphis, Tenn., secretary-treasurer.

**Meeting of Academy of Sciences.**—The autumn meeting of the National Academy of Sciences was held, November 10-11, at Harvard University, Cambridge, Mass., and November 12, at the American Academy of Arts and Sciences, Boston. Among many others who addressed the meeting were Hans Zinsser on "Bacterial Allergy"; Elmer V. McCollum, Ph.D., on "The Effects of Small Amounts of Fluorin in the Diet of the Rat"; Dr. Simon Flexner on "Virus Encephalitis in the Rabbit"; and Francis G. Benedict, Ph.D., on "The Skin Temperature of Men and Women."

**Tuberculosis Conference.**—Officials of the National Tuberculosis Association held a conference at the Hotel Pennsylvania, November 7-8, and announced the seventh annual sale of Christmas seals. The printing order will be for one billion and a quarter Christmas seals. It was stated that the number of state and local associations for the prevention and cure of tuberculosis in New York had increased to 13,000, the number of hospital beds to over 70,000 and dispensaries and clinics to more than 600. Seventeen years ago there were fewer than 100 public health nurses devoting their efforts to this work; today there are more than 10,000.

**Warning.**—The Academy of Medicine of Cleveland reports that a man calling himself Thomas Collins, who has represented himself as a cattle buyer at times and again as a colonel in the U. S. Army, has obtained money in the city and the hospital service by issuing fraudulent checks. He is tall, with black hair and blue eyes and about 40 years old. He has several scars on his abdomen, one of which is recent. He has the figure of a nurse tatooed on one arm and a cross, anchor and star on the other. Being in need of an operation for anal fistula, he probably soon will seek medical attention somewhere. If recognized, please notify the Cleveland Hospital Council, Cherry 166.

**Bequests and Donations.**—The following bequests and donations have been announced recently:

To the Brooklyn and Summit homes for blind babies, of the International Sunshine Society, $10,000, from Edwin Gould.

To Harvard University for research in bacteriology and for the purchase of books, the residue of the estate of the late Mrs. Gordon Dexter, Boston, estimated at several hundred thousand dollars.

To Meharry Medical College, Nashville, Tenn., a $10,000 trust fund and the residue of the estate of Dr. George W. Hubbard. The principal of the trust fund will revert to the college at the death of the heir.

To Mount Sinai Hospital, and United Hebrew Charities, New York, each, $1,000, by the will of Elias Sonnenfeld.

To St. Luke's Hospital, New York, as a memorial to John and Elizabeth Joralemon, to Presbyterian Hospital, as a memorial to John and Charlotte Hays, each $7,500; to Seaside Hospital, as a memorial to Stephen and Julia Hays, $5,000; to the Association for Improving the Condition of the Poor, $1,000, by the will of Elizabeth A. Hays.

The Harrison Memorial Hospital, Cynthiana, Ky., $5,000, by the will of the former mayor, R. S. Withers.

**Industrial Morbidity Statistics.**—The National Industrial Conference Board recently invited informally a number of physicians and statisticians to meet and consider the classification of industrial morbidity statistics in order to stimulate cooperative interest and to bring some definite action. At the first meeting the conference comprised Dr. William H. Davis, Bureau of Census; Louis I. Dublin, American Statistical Association; Dr. Robert S. Quinby, American Association of Industrial Physicians and Surgeons; Dr. Frank L. Rector, Conference Board of Physicians in Industry; Edgar Sydenstricker, U. S. Public Health Service, and Dr. Wade Wright, American Public Health Association. A special committee of expert statisticians was appointed to develop an abridged classification which was later adopted by the full committee. This list has been published and copies may be obtained from Dr. Frank L. Rector, Conference Board of Physicians in Industry, 247 Park Avenue, New York. This list will be revised from time to time. The work of the committee has been placed under the sponsorship of the U. S. Public Health Service and a permanent advisory committee representative of interests that have been active in this work will be formed to further its development. The list of diseases and pathologic conditions for industrial morbidity statistics as now published has corresponding title numbers in parentheses from the National List of the Causes of Death, Third Edition, Paris, 1920.

## LATIN AMERICA

**Personal.**—Dr. G. Dumas was the first interchange professor reaching Mexico since the foundation of the university exchange between France and Mexico. The arrangement is that two French professors are to lecture in Mexico in July, August and September. An honorary degree was conferred on Dr. Dumas, and he was elected an honorary member of the Mexican Academy of Medicine.——Dr. F. Risquez has been appointed lecturer on military hygiene and sexual enlightenment in the Military School of Venezuela.——A portrait of Dr. Tavares de Macedo was presented with much ceremony to the Candido Hospital, at Jurujuba, Brazil, in tribute to his thirty years of service in public health and hospital work.——Dr. P. Mühlens has been lecturing on tropical medicine at Buenos Aires.——Dr. López del Valle, chief of the public health service in Havana, has been appointed professor of hygiene.——Dr. Sarmento Leite, dean of the medical faculty of Porto Alegre, presided at the recent inauguration of the new medical building.

## FOREIGN

**Next French Surgical Congress.**—The meeting in 1925 will be presided over by Prof. Léon Bérard, Lyons, with Prof. J. L. Faure, Paris, as vice president. The three topics appointed for discussion are "Ultimate Outcome After Treatment of Cancer of the Rectum"; "Tuberculosis of the Knee Above Age of 15" and "Apparatus for Fractured Humerus and Femur."

**Prize for Work on Endocarditis.**—Our foreign exchanges are reproducing the particulars of the prize of 25,000 pounds sterling offered by the Harmsworth family for a report of exhaustive research and experience with infectious endocar-

ditis. The details of the lines along which research should be carried on can be obtained by application to Dr. Seymour Price, Sloane-Gardens 41, London S W 1.

**Japan Opens Medical School in China.**—Many prominent Japanese and Chinese officials attended the recent opening of the medical school of the Chingtao Hospital, which has been erected by the Japanese government, says the *Japan Medical World*, as one of Japan's enterprises for the education of Chinese students. The school will be maintained by the hospital and by a subsidy of 140,000 yen per annum from the Japanese government.

**Council on Pharmacy and Chemistry for Spain.**—One of the communications presented at the recent medical congress at Seville was an appeal by Madinaveitia (director of the *Archivos de Medicina, Cirugía y Especialidades*, which is the official organ of the Academia Médico-Quirúrgica of Spain) for the creation of some central headquarters for supervision of medicinal articles, vaccines and serums. He added that physicians now everywhere are practically unanimous in respect to the necessity for rejecting all remedies of which the formula is kept secret. He urged the acceptance of some viable program for a supervising center, saying "It may be a state institution, like those which exist in almost all countries, or it may be an organization due to the initiative of physicians alone, like the one which is at work in the United States, in addition to the state control. This one in the United States, created and supported by the American Medical Association, publishes the results of its investigations every week in the weekly journal which is the official organ of that Association, and which is received by all the physicians in that country. It has become so important for manufacturing chemists to get their products admitted to the list of the acceptable articles that none of them neglects to send in his product for examination, knowing that without this there will be no sale for his product." The control center he pleads for in Spain should take vaccines, antiserums, antitoxins, organ extracts and proprietaries under investigation. Domestic and foreign manufacturers should be compelled to submit their products for examination, and an adverse decision should exclude them from sale if the center is an official organization; or physicians should declare a boycott against articles not admitted to the list if extra-official. He added that the medical press would surely be willing to publish the list of the articles approved of and also of the articles not admitted to the approved list. The manufacturers might pay a small fee on submitting their products, and this fee would help to sustain the institution. In conclusion he emphasized the vital importance of the selection of the experts for the institution free from any connection with commercial interests.

### CORRECTION

**Pediatric Staff of St. Louis University.**—Last week THE JOURNAL, page 1692, noted that the pediatric staff of St. Louis College of Physicians and Surgeons, St. Louis, contributed seven papers at a general meeting of the St. Louis Medical Society, November 11. It was the pediatric staff of St. Louis University that contributed these papers.

## *Government Services*

### Surgeon General Stitt to Be Reappointed

Announcement has been made by the secretary of the navy that Rear Admiral Edward R. Stitt, surgeon general of the navy, will be reappointed for another term of four years. His present term expires November 30. The President will send his renomination to the Senate shortly after Congress convenes. The work of Surgeon General Stitt during the last four years has met with the approval of navy officers, and especially those in the medical corps. An outstanding feature of Surgeon General Stitt's service has been the establishment of an accounting system for hospitals, under the budget system, which has been highly successful. The postgraduate instruction of medical officers is another important achievement. As a writer and educator, a member of the National Board of Medical Examiners, and the Federal Board of Hospitalization, Admiral Stitt has become one of the best known medical men in government service.

## *Foreign Letters*

### LONDON

*(From Our Regular Correspondent)*

Nov. 15, 1924.

### The Tercentenary of Sydenham

The three hundredth anniversary of the birth of Sydenham, the father of clinical medicine in this country, was commemorated by a meeting of the Royal College of Physicians. An address was delivered by the president, Sir Humphry Rolleston. The name of Thomas Sydenham, he said, stood out as one of the apostles and prototypes of the scholar-physicians and anatomists who searched out the secrets of nature by way of experiment. Sydenham, "the British Hippocrates," not only revived, but put into practice, the dictum that medicine depended on the observation of, not the hypotheses about, disease; and, after an interval of about twenty centuries, it was he who gave a new birth to clinical medicine by concentrating on the study of the patient, instead of relying on authority. It was "his nature to think where others read." After his education at Oxford, which was interrupted by the Civil War, in which he served as a Roundhead trooper, Sydenham migrated to London, starting a practice in Westminster, a district whose malarial nature provided material for his future writings on fevers. It was not, however, until 1663 that he obtained from the Royal College of Physicians the license necessary for legitimate practice. His practice eventually became extensive, though the fact that he was a Puritan among Royalists, and his unusual methods, retarded its development. Gout, which attacked him at the age of 25, followed by renal colic at 37, hampered his activities, and eventually he died, Dec. 29, 1689, at his house in Pall Mall, where he had lived for twenty-two years. He was buried in St. James's, Piccadilly, a memorial tablet describing him as "Medicus in omne aevum nobilis" being erected there in 1810 by the Royal College of Physicians. Sydenham's works were immortal, especially those dealing with fevers, the distinction for the first time of scarlet fever from measles, of rheumatism from gout, and the classical descriptions of chorea and hysteria. He insisted on the importance of the accurate description of the natural history of diseases, the constant and essential symptoms being distinguished from the accidental. Regarding diseases as specific, he urged that specific remedies should be sought for them, which had led to his being regarded as the founder of scientific nosology. Sydenham's claim to remembrance did not rest alone on his practical outlook on medicine, for, in his attempts to obtain a cure for epidemic fevers, he had made observations on their incidence and variations which led to his famous hypothesis of "epidemic constitutions." By a kind of prophetic sense, he seemed to have foreseen that bacteriology might appear and be held to explain the whole question of the incidence of acute disease; at any rate, he had provided reservations to such a simple and exclusive conception.

### The British Institute of Radiology

In order to promote cooperation between technicians, physicists and medical radiologists, a committee consisting of representatives of the Royal Society of Medicine, the Roentgen Society and the British Association for the Advancement of Radiology and Physiotherapy was formed in 1923 to found a central institute. By means of money collected, and the help of the Mackenzie-Davidson Memorial Fund, a lease was purchased in Welbeck Street, and the premises were equipped. The property includes the old church of the Russian embassy, which has been converted into a lecture hall. The objects of the British Institute of Radiology are: (1) to promote the

advance of radiology and physiotherapy on scientific lines under the direct control of the medical profession, protecting in every way possible the interests of those engaged in these subjects; (2) to secure legislative improvement in this connection; (3) to provide for the delivery of lectures, the holding of classes and examinations, the establishment of scholarships and the granting of diplomas; (4) to promote and provide for research; (5) to establish a library and museum, and to organize exhibition of apparatus, and (6) to establish charitable and benevolent funds for the benefit of those engaged in radiology and physiotherapy. It is proposed to hold an international congress of radiology at the institute in the summer of 1925. It is hoped that this may result in an international committee. An appeal is now being made for $24,000 to pay off a bank loan and to provide for further development. The subscription for membership of the institute, including the *British Journal of Radiology*, is $15 annually.

### The Methods of Judicial Execution

At the Medico-Legal Society, Prof. Harvey Littlejohn advocated hanging as the most humane method of execution yet devised. The "short drop," employed by the former executioner Calcraft, from 2½ to 3 feet, did not in every instance result in instantaneous death. This drop had also been employed in past days in the United States, and the results had been so unsatisfactory that the method of electrocution was substituted for hanging. Marwood, who succeeded Calcraft, had employed the "long drop," from 7 to 10 feet or more; and while with this drop death was in all cases instantaneous, yet considerable risk was run of detaching the head from the body. The drop at present employed was about 6 feet, and fulfilled the purpose of causing instant death without detachment of the head. In the past, the knot had been placed under the chin or at the back of the neck, but now it was invariably placed either just behind the left ear or beneath the angle of the left side of the lower jaw. This position was most effective, causing dislocation at the upper part of the vertebral column between the second and third cervical vertebrae. The rope was usually three-fourths inch in diameter.

In the discussion, Sir William Willcox agreed that hanging was far more reliable than the method of electrocution adopted in the United States, in which several cases of disastrous failure had been reported. Earl Russell suggested the introduction of coal gas into the cell in the course of the night when the condemned man was asleep. The president, Lord Justice Atkin, could not imagine anything more horrible for the criminal than to know that on some unknown night he would go to sleep and that death as the result of the cell being filled with gas would occur before the morning. He would say nothing of the difficulties that would result if for any reason the unfortunate man failed to succumb, but if the man was told which was to be the night of execution he would probably be unable to sleep and would be quite slowly and consciously suffocated by the coal gas. On the whole, the present method of execution seemed to be the best.

### The Advance of Knowledge from Injuries of the Spinal Cord in the War

What has been learned with regard to the functions of the spinal cord from a careful study of spinal injuries received by soldiers during the war is embodied in a report just issued by the Medical Research Council. This report is the second compiled by the Committee on Injuries of the Nervous System, and deals with injuries of the spinal cord and cauda equina. Although our knowledge of the functions of the spinal cord before the war was considerable, it has been materially increased by the study of the phenomena resulting from section of the cord by high velocity projectiles. The older conception of the effects of a complete transverse lesion has had to be modified; we now know that, below the level of the lesion, the injured cord in favorable circumstances may become active again and transmit reflex movements, although still completely severed from the rest of the nervous system. The greatest factor in securing a good result, apart from the degree and level of the injury, is adequate and early treatment. Treatment of all paralytic cases is difficult. It involves much nursing and constant care, both in early and in late stages. For the disabled service man, this has been provided in the building and endowment of the Star and Garter House at Richmond, a magnificent hospital where the most advanced forms of treatment can be administered. The report contains introductory sections on the anatomy and physiology of the spinal cord and cauda equina and methods of examination. Diagnosis, prognosis and pathology are dealt with fully, while the chapters on treatment, both medical and surgical, are thorough. There is much useful information on the treatment of such complications as bedsores and paralysis of the bladder. The whole report is an important contribution to physiology as well as to medicine.

### The Street Accidents of London: Alarming Record

The particulars of street accidents recorded by the police in the three months of the last quarter, July-September, show 22,351 accidents, of which 223 were fatal. This means an average well over two persons killed daily. The forms which the accidents took are given in the table.

*Accidents Caused by Vehicles*

| Type of Vehicle | No. Persons Killed | No. Accidents to Persons or Property |
|---|---|---|
| Mechanically propelled: | | |
| Omnibuses | 41 | 2,238 |
| Tramcars | 2 | 1,132 |
| Cabs | 7 | 1,043 |
| Private motor-cars | 55 | 5,974 |
| Motorcycles | 26 | 1,997 |
| Trade and commercial | 65 | 4,242 |
| Traction engines | .. | 14 |

NOTE.—The second column of figures includes those given in the first column.

With regard to other accidents, the particulars were as follows: Omnibuses, 5; cabs, 16; broughams, 48 (one death); trade and commercial vehicles, 2,108 (twelve deaths); pedal cycles, 3,481 (fourteen deaths); and horse, ridden or led, thirty-three.

As usual, the facts alone are set forth, and there is no commentary. But the figures for the deaths appear to be far in excess of any previously recorded. Undoubtedly the advent of the motor vehicle, with its much increased speed, has added greatly to the dangers of the streets.

### "The Scandal of Secret Remedies"

Under the title "The Scandal of Secret Remedies," Sir Thomas Horder has contributed an outspoken article to the *World To-Day*. He says, that our country is the safe and happy hunting ground for the "patent medicine" quack, not only because we are gullible, but because it is nobody's business to bring him to book. There is no person whose duty it is to see whether "patent medicine" venders are making fraudulent claims, so that they can practically do what they like so long as they keep outside the bounds of gross and obvious impropriety. The public should be protected against fraud, he contends, even though the fraud takes the form of exploiting its own gullibility.

Dealing with medicated wines, he suggests that such wines do not receive as much attention as they should from teetotal advocates. The majority contain as much alcohol as an ordinary sherry or port—no wonder they have a huge sale.

There is no "patent medicine" on the market, says Sir Thomas Horder, the preparation of which could not be imitated or improved on by a qualified pharmacist, following some recognized formula, the cost of which is many times less than that charged by the wholesale quack. Recognizing, however, the existence of people who are attracted by the mere fact that a remedy is secret, and that its virtue departs from them if it ceases to hold this element of mystery, Sir Thomas Horder proposes that when the much needed legislation to control "patent medicines" is introduced, the minister of health might permit the sale, at not too cheap a figure, of a few colored waters and bread pills concerning which there would be harmless secrecy as to composition.

### Disappearance of Rabies

In a circular, the ministry of health states that, in view of the disappearance of rabies in animals in England and Wales (no case having occurred since December, 1921), it has been decided that special arrangements for antirabic treatment are no longer necessary. A revised memorandum to sanitary authorities on the procedure recommended to be followed in the event of persons being bitten by dogs suspected or ascertained to be rabid is also issued. Notice is given that arrangements may still be made with Professor Dudgeon of the department of pathology, St. Thomas's Hospital, London, for antirabic treatment with phenolized vaccine prepared at the ministry's laboratory, but the cost of the treatment and any other expenses must be borne by the patient or by the authority.

### Statistics of Insanity

Jan. 1, 1924, the number of notified insane persons under care in England and Wales was 130,334, an increase of 4,055 over the number, Jan. 1, 1923. This increase is the largest ever recorded, and may be compared with increases of 2,565 in 1922, of 3,370 in 1921, and of 3,580 in 1920; but it by no means necessarily connotes any increase in the incidence of insanity among the general population. The growth of accommodation has not kept pace with the needs. During the year, 7,295 patients were discharged as recovered, a recovery rate, calculated on the admissions, of 31.64 per cent.; 28.69 for males, and 34.03 for females.

## PARIS

*(From Our Regular Correspondent)*

Nov. 7, 1924.

### Thirty-Third French Congress of Surgery

Of the three subjects on the program of the thirty-third congress, two especially presented a general interest: (1) the indications for surgical treatment in uterine fibromas, and (2) preoperative and postoperative care, and choice of anesthesia, in gastro-intestinal surgery.

#### SURGICAL TREATMENT OF UTERINE FIBROMAS

Dr. Louis Tixier of Lyons reviewed in his paper first the indications for urgent intervention. In dealing with submucous fibromas, there are three things which may necessitate prompt intervention: (1) torsion of the pedicle of fibrous polyps; (2) suppuration and gangrene, and (3) grave uterine hemorrhages. In dealing with subserous and interstitial fibromas, the indications for urgent intervention may be grouped under five principal heads: (1) intra-abdominal torsion; (2) intestinal occlusion; (3) gangrene and suppuration; (4) acute diffuse peritonitis, and (5) intraperitoneal hemorrhage.

Hemorrhages in themselves are rarely an indication for intervention; but a waxy look observed in some patients, edema and vascular troubles, which may be associated with marked anemia, usually are traceable to the histologic nature of the tumor, which throws hemolytic lipoids into the blood, or to the large volume of the tumor, causing compression of the vessels and the ureters. Under these conditions, an operation is indicated, but it aims, in reality, less at the suppression of the hemorrhage than the abolition of the infection and of the compression. A severe type of leukorrhea in a young woman points to the possibility of gangrenous tissue, in either a submucous or an interstitial fibroma. On the other hand, certain modifications of leukorrhea (especially a fetid odor) are, in elderly women, sometimes the first symptom of cancerous degeneration. Likewise, excessive pain awakens suspicion of the tumor. In elderly women, it may be admitted that a fibromatous uterus that becomes painful is a cancerous uterus. Account must also be taken of modifications in the consistency of the tumor, which may become impregnated with calcareous deposits and become as hard as rock, or, on the contrary, may become soft. Irradiation of cretified fibromas is of no effect. The action of rays on cystic tumors may be even dangerous, for it may augment circulatory disorders. Both should, therefore, be operated on. The surgeon may likewise be asked to intervene on account of grave urinary disorders. Complications, such as aseptic gangrene, infection of the uterus or adnexa, and sarcomatous or cancerous degeneration, come within the domain of the surgeon.

The operative mortality in fibroma is around 4.5 per cent. (576 deaths in 12,893 cases compiled by Tixier), 2 per cent., or nearly half, resulting from infectious complications. Anesthesia and vascular complications (phlebitis, embolism) are likewise causes of death; hence the necessity of improving the technic and the preoperative and postoperative care. Surgery must be conservative whenever possible. The indications for myomectomy, which leaves the uterus intact, should be extended.

Dr. G. Labey of Paris reviewed the operative methods applicable in the surgical treatment of fibromas and the indications for operation during pregnancy, such as fear of dystocia, and disorders of a mechanical or degenerative nature. It is difficult to foresee, before the end of pregnancy, whether or not a pelvic fibroma will cause dystocia. Nevertheless, there are certain signs that point in this direction. The smaller a tumor is, the softer it is and the more likely will an ascent toward the abdomen occur. Fibromas of the anterior or lateral portion of the inferior segment have much more chance of being pushed upward. Those in Douglas' pouch are not usually compatible with a spontaneous delivery. As to the time of intervention, opinions differ. Bégouin in a primipara awaits the onset of labor, whereas in a multipara he intervenes at once. Other surgeons hold that operative intervention is always preferable to expectant treatment, not only for the mother but also for the child. Compression is noted especially in fibromas of the lower segment. The rectum, the urethra and the ureters may be embarrassed in their functioning, which may result in grave symptoms, such as intestinal occlusion, retention of urine, hydronephrosis and even anuria. Compression of the blood vessels and of the nerves finds its expression in pain, varicose veins and phlebitis, which may require surgical intervention. Aseptic necrosis, regarded as rare because it is rarely recognized, is, according to Brindeau and Leroux, one of the principal complications of fibromas occurring in pregnancy. The necrotic tissue, which usually does not become infected during the course of the pregnancy, is frequently invaded by aerobic or anerobic micro-organisms during the puerperium. This complication is manifested by pain and tenderness. Intervention is then indicated and may be extremely urgent. The menace of abortion, seemingly due to a tumor preventing the normal development of the uterus, points to intervention, especially if the tumor is easly accessible. Myomectomy is the operation of choice. Its prognosis has improved greatly. Of 116

cases, reports of which were collected by Cotte and Creyssel and by Labey (114 abdominal myomectomies and two vaginal myomectomies), there were only two deaths of mothers and eighteen postoperative abortions. Only when myomectomy is contraindicated should the indications for hysterectomy be considered. If the fetus has reached the stage of viability, the operation, whatever it may be, should be preceded by cesarean section.

GASTRO-INTESTINAL SURGERY

Professor Lambret of Lille and Dr. Lardennois of Paris presented papers on surgery of the stomach and surgery of the intestine, respectively. The dangers especially incident to gastric surgery are operative shock and pulmonary complications. Resistance of the patient is diminished under the influence of a series of factors: partial inanition, autophagia, toxicosis and a tendency to azotemia and acidosis. It is therefore necessary to subject the patient to a complete examination by laboratory methods, the interpretation of which should, however, remain subordinate to the clinical findings. Lambret considers the following tests indispensable: weight, arterial tension, oscillometry, blood count, percentage of hemoglobin, azotemia, acidosis. Furthermore, careful account must be taken of the deficiency in glycogen. In preoperative care, rest (physical and mental) is the most important element. The diet should be abundant and should consist preferably of liquid and soft foods, coarse breads, fresh jellies, and grated and sieved meats. Hydration by all means possible should be provided: various kinds of refreshing drinks, subcutaneous injections of sodium chlorid or glucose solutions, and the rectal drip. Since all occasions for the loss of fluid must be avoided, cathartics are contraindicated, and the evacuation of the large intestine must be assured by repeated lavages. Tonicardiac medication will render great service: subcutaneous injection of digitalin, spartein, and camphorated oil to which ether has been added. Gastric autointoxication should be combated by repeated lavage. In very anemic patients, preoperative blood transfusion will be indicated. As a prophylactic of pulmonary complications, Lambret is a strong advocate of preventive vaccination.

As for the form of anesthesia, chloroform and ether are easiest for the operator, but these are the most toxic anesthetics for the patient. Nitrous oxid does not injure the lungs, the kidney or the liver. It rarely occasions vomiting and does not produce shock, but muscular relaxation, particularly relaxation of the abdomen, is not complete. Furthermore, hemostasis is rendered difficult. Ethyl chlorid is without marked action on the heart, the liver and the kidney, but it has a bad effect in lowering the blood pressure, while the sleep that it induces is rarely complete and always of poor quality. Of the local anesthetics, Lambret prefers procain, which he employs mainly in the form of infiltration anesthesia. This method becomes more efficacious if the patient is prepared by an injection of a scopolamin-morphin mixture. As for postoperative care, these measures are recommended: the Fowler position, anodynes, a gradual resumption of alimentation, gastric lavage, and breathing exercises to prevent pulmonary complications.

In intestinal surgery, preoperative care, according to Lardennois, should be directed mainly toward the preparation of the intestine. Its evacuation should not be secured by repeated and weakening purgations, since they are liable to produce a toxic enteritis. An endeavor should be made to restore gradually the normal action of the intestine. If spasticity is present, recourse may be had to belladonna and its derivatives. Spinal anesthesia has been the subject of recent violent attacks, but Lardennois thinks that its failures occur mainly in the services in which it is used but rarely.

Lambret and Lardennois confined themselves, in their papers, to the exposition of their own methods of practice and their personal views without taking account of what is done elsewhere. It would have been interesting if they had referred to the progress of gastro-intestinal surgery in the United States. It is somewhat surprising that they did not so much as mention the use of insulin, as recommended by Thalhimer and others for preoperative and postoperative acidosis.

## PRAGUE

*(From Our Regular Correspondent)*

Nov. 4, 1924.

### Seventy-Fifth Birthday of Professor Vejdovsky

Prof. Francis Vejdovsky celebrated his seventy-fifth birthday, October 24. Professor Vejdovsky is the senior of Czech zoologists. He started his teaching career in the Prague School of Technology but soon entered the teaching staff of the Czech University in Prague, with which he was connected until 1919. Professor Vejdovsky is one of the representatives of morphologic investigators in zoology and is widely known through his researches in the French, English and Russian literature. Cambridge University honored him some time ago by conferring on him the honorary doctor's degree. In his own country he holds many prominent positions, among others the presidency of the Royal Society of Science. He is the creator of a number of systems of animal species, and described a great many new ones. His publication on the crustacean bathynella some time ago has aroused considerable interest. Most of his energies were devoted to the study of the animal cell. With Van Benede and Boveri he was the first to point out the importance and structure of the dynamic center of the animal cell in its division. The last two important studies of Vejdovsky are concerned with the problems of sexual cells and especially with the structure and morphologic changes of the chromosomes. He has an independent and original interpretation of the reduction of chromosomes in cell division, with particular reference to the mendelian theory. Although he retired from his teaching position in 1919, he did not stop his scientific work. A comprehensive study on the elementary problems of cellular structure is to be published soon. He is well known to the Czech medical profession, having taught for many years general biology in the premedical curriculum.

### Rabies

Rabies became an important public health problem in Czechoslovakia after the conclusion of the war, as in most of the central European countries. Although strict measures for the suppression of this malady have been instituted, including free Pasteur treatment and compulsory muzzling of dogs, there seems to be no reduction in the occurrence of the disease, especially in the eastern provinces. The ministry of agriculture is preparing new rules and regulations governing the police control of dogs. A special film was prepared in which all the forms of rabies in dogs, cats, horses, cows and man are shown in all its stages, which will be used for educational purposes in the infested territory. Rabies is being studied as a scientific problem especially on the Brno School of Veterinary Medicine by Prof. Francis Kral. He has been able to demonstrate that rabies can disappear spontaneously in an animal in a few hours, although typical symptoms have been present and the disease diagnosed later on without any doubt through pathologic findings. Also, he has described atypical forms of the disease in domestic animals which are almost never diagnosed as rabies. These researches have naturally an enormous importance for the suppression of the disease, as they put rabies in the class

of diseases spread by carriers. This also explains why rabies is continuing in Czechoslovakia in spite of the fact that strict measures are being applied in every case of demonstrable rabies in animals. As it is evident that the eradication of this dangerous disease cannot be accomplished without the cooperation of the public and proper education, especially among the owners of dogs, steps have been taken for the organization of a league against rabies along the lines of similar associations, such as those against tuberculosis and infant mortality. At a recent meeting in Brno, a preparatory committee for the foundation of such a league was appointed.

### Congress of Russian Scientists

A congress of Russian scientists was held in Prague, September 25-October 2. The congress represented the work of Russian scientists who emigrated from Russia after the revolution. Medical faculties of almost all European countries were represented by Russian investigators who have taken refuge there. The most interesting lecture was presented by Dr. Mendelejeva, the daughter of the famous Russian chemist. She spoke on the biochemical aspects of the cancer problem. She was able to demonstrate that tissues do not grow in vitro when blood of the animal from which the tissue was taken is present. Embryonal tissues contain liquids that are able to paralyze these powers of the blood and make it possible for these tissues to grow vigorously. Dr. Mendelejeva was able to demonstrate that cancer growths contain also similar liquids, which are analogous to those present in embryonal tissues and which might be responsible for the growth of the cancerous tissue. Dr. Mendelejeva is assistant to Professor Filipson of Brussels, and her special line is medical physics.

### Death of Savnik

Dr. Pavel Savnik died recently in Zagreb. Dr. Savnik is known to syphilologists through his researches on the presence of the spirochete in different manifestations of syphilis. Dr. Savnik was lately professor of dermatology and venerology in Zagreb, but began his teaching career in Prague, where he was assistant to Professor Samberger. His special interest was devoted to serologic problems in venerology. He published a paper on the Wassermann reaction in the cerebrospinal fluid and one on the serum reaction in gonorrhea as the result of this group of researches. His most important contribution to the scientific literature is his description of diffuse infiltrations in secondary syphilis. Before his death he was elected the dean of the medical faculty of Zagreb, but his unexpected death prevented him from becoming one of the organizers of this new medical school.

## BERLIN

*(From Our Regular Correspondent)*

Nov. 2, 1924.

### The "Haff" Disease

For the last few months, a peculiar disease has been prevalent in East Prussia in the region of the Königsberg *Haff*, a fresh-water bay connected with the Baltic Sea. The fact that the disease is named after the region in which it has appeared suggests that the clinical aspects and the etiologic significance of the disease are not as yet fully understood. The disease has been confined almost exclusively to fishermen. It begins suddenly, with severe pains in the limbs and a feeling of great weariness. These symptoms are followed by a rigidity of the arm and leg muscles, which causes the victims to fall to the ground, unable to move from the spot. In some instances, the whole crew of fishing vessels has been seized with the disease almost simultaneously, so that they were unable to row or even to cast anchor. Other fishermen happening along have had to come to their assistance and take their boats to the nearest harbor. The muscular rigidity does not persist long, but there are other symptoms that continue longer: headache, pains in the sacral region and the limbs, and sometimes nausea and vomiting. In most cases the disease runs its course in a few days, but there have been some cases in which the symptoms lasted for from two to three weeks. Some persons have had three or four attacks of the disease. Fever has not been observed as yet, but hemoglobinuria is always present on the first day. Aside from muscular rigidity, there have been no manifestations indicating involvement of the nervous system; and all nerve reflexes were intact. In several instances, the disease has ended fatally, though some doubt is justified as to whether death was due solely to the mysterious disease. In the course of a few weeks, the affection has spread throughout the villages along the eastern shore of the bay, whereas the fishermen living on the opposite western shore have remained, for the most part, immune to its attacks. In recent weeks, a few sporadic cases have occurred also in the vicinity of Danzig. In spite of all the clinical, bacteriologic and hygienic investigations, the cause of the disease has not been discovered. Poisoning by some unknown gaseous arsenic compound has been suspected, it being assumed that the poisonous substance had found its way into the waters of the bay through deposits of refuse from factories—especially, cellulose factories—and thence had been ingested by the victims. Likewise, the animals, plants, water, air, and the soil of the region affected have been examined, but no definite results have been reached.

Rosenow and Tietz refer to morphologic changes found in the erythrocytes; namely, shadow corpuscles, and regularly, even several weeks after the attack, large numbers of erythrocystes with Ehrlich's hemoglobinemic bodies. They consider that some exogenous, unorganized poison affecting the blood corpuscles is the cause of the disease. The erythrocyte count and the hemoglobin content were normal in all cases. The blood platelet count was not reduced. The neutrophilic leukocytes were increased; the eosinophilic were lacking. As the disease interferes materially with the occupation of the fishermen, it is having a bad effect on economic conditions among them. Investigations are being pushed, in order to discover the cause of the disease and to combat it more effectively.

### Struggles of German Physicians

In order to enlighten the public concerning the subjects of controversy that lie at the base of the struggle between the physicians and the health insurance societies, and especially, with a view to acquainting the people with the bad effect that legislation in social matters has had on economic conditions among physicians and to soliciting aid, the *Aerztekammer* (chamber of physicians) for Berlin and Brandenburg organized an extraordinary session, a few days ago. Government officials, prominent members of parliament and representatives of several medical faculties were present. The address of the secretary and manager of the physicians' league of Greater Berlin, in which he developed the whole situation with considerable detail, was received with great approval. The speech of the president of the University of Berlin (a professor of theology), in which he expressed his sympathy for the physicians, made a deep impression. Professor Lubarsch, dean of the Berlin medical faculty, issued a declaration in the name of the other universities, saying: "The medical profession has long been characterized by its love of freedom. Those who practice medicine must possess high qualities of character. Laws and decrees which make the physician morally dependent on the officers of the health insurance societies; which limit the number of physicians admitted to the panel; which deprive a patient of the right to select the physician of his choice; which put unwarranted

barriers in the way of young men who seek to enter or to advance themselves in the medical profession, and which threaten to strangle scientific research, are a menace to the dignity and the freedom of the German physician and the German people, and must be abolished without delay. It is the duty of the instructional corps of German universities, as the advance guard of liberty of thought and action among men of science, to enter the lists with tongue and pen, in order to secure for the medical profession the freedom that is their right; and I am sure that the medical faculties will not fail in the performance of this duty. We deem a reform of legislation as affecting the mutual relations of the physicians and the health insurance societies to be an imperative necessity. We regard the placing of the health insurance societies under an effective board of supervision as an absolute necessity. We hold, furthermore, that if the activities of physicians were kept separate and distinct from the activities of the health insurance societies (as in other countries), such a change would restore peace and would give physicians the independence and awaken the zestful professional spirit that are absolutely needed, not only for their own sake but still more in the interest of the German people as a whole."

Previous to the meeting described above, the Deutsche akademische Assistentenverband, in collaboration with the Bund deutscher Assistenzärzte, had held a joint conference, at which the following resolution was adopted:

"The bad economic situation of the health insurance societies, which was urged in defense of the issuance of the decrees bearing on health insurance whereby the younger graduates in medicine have been hampered in their desires to become panel physicians, has now been relieved. The younger generation of physicians, which is practically excluded from panel practice and thus from all opportunity of earning a living by their profession, demands, therefore, that the decrees issued at a time of emergency be repealed at once. The two medical societies adopting this resolution are well aware that their ultimate needs will not be met without a complete reform of the health insurance act, which, in its present form, does not satisfy the social claims of the insured nor the rights of the medical profession. Freedom of action must be assured physicians by according them, through impartial medical boards, a proper voice in the administration of the health insurance societies. Economies in the administration of the health insurance societies must be effected through simplification of the administrative and technical methods employed and not at the expense of the physicians or the insured. The administration of the health insurance societies must be placed under federal supervision, with the cooperation of the professional organizations. In all proposals with respect to reforms, the question must be asked whether they are of such a character as to promote a better understanding between physician and patient and provide the physician with an income in keeping with his profession."

### The Semicentennial of the Friedrichshain Hospital in Berlin

The municipal hospital at Friedrichshain (Berlin) has just celebrated its semicentennial. It was built mainly in accordance with the plans of Rudolf Virchow, and at the time of its erection was the finest and the most modern hospital in all Germany. The funds for its construction were furnished by the legacy of a citizen of Berlin. Among the surgeons who have been directors of the hospital in the past may be mentioned Trendelenburg, Schede, Eugen Hahn and A. Neumann. Kümmell and Rinne served here as assistant physicians. Riess, Fürbringer and Stadelmann have been at the head of the department of internal medicine. Carl Friedländer and von Hansemann have acted as pathologic anatomists.

## Marriages

W. W. Wilkerson, Jr., Nashville, Tenn., to Miss Fawn Layman Parent of Lima, Ohio, recently.

George Irving Nelson, Iowa City, Iowa, to Miss Amelie Kraushaar of Waverly, September 13.

Leslie W. Blackwood of Chicago to Miss Bernice Tallefson of Rockdale, Wis., November 22.

Fred Valentine Hibbs to Miss Vera Farrell, both of Carroll, Iowa, at Spencer, August 12.

St. Claire Ransford to Mr. Norman David Lindsley, both of Los Angeles, November 11.

James Gwynne Fowler to Miss Maude Taylor, both of Emerson, Iowa, August 30.

George Elvidge, Perry, Iowa, to Miss Lenore M. Herman of Algona, September 17.

Chandler S. Lynch to Miss Mabel Lynch, both of Lumpkin, Ga., October 3.

Isaac B. Perkins to Miss Ethel L. Wilhelm, both of Denver, recently.

William S. Gonne to Miss Marion Morton, both of Detroit, October 15.

## Deaths

**Luther Milton Powers** ● Los Angeles; Washington University School of Medicine, Baltimore, 1877; formerly instructor in hygiene, University of Southern California College of Medicine, Los Angeles; past president of the Los Angeles County Medical Society; delegate to the International Congress of Hygiene of American Republics, Washington, 1902; for many years health commissioner of Los Angeles; aged 71; died, October 31.

**Robert John Kingston,** Newburgh, N. Y.; University of Michigan Medical School, Ann Arbor, 1876; Medical Department of Columbia College, New York, 1877; Medical Department of the University of the City of New York, 1877; aged 70; died, November 11, of injuries received when struck by an automobile.

**Charles Woollard,** Vancouver, B. C.; Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1901; L.R.C.P., London, M.R.C.S., England, 1910; served with the Canadian Army Medical Corps, with rank of lieutenant colonel, during the World War; aged 53; died, September 22, of septicemia.

**William Corning Stevens** ● Orion, Mich.; University of Michigan Medical School, Ann Arbor, 1874; formerly professor of gynecology, Michigan College of Medicine and Surgery, Detroit; at one time on the staff of the Emergency Hospital, Detroit; aged 72; died, November 12.

**Roy Bicknell Dudley** ● Clinton, N. Y.; Northwestern University Medical School, Chicago, 1898; served in the M. C., U. S. Army, with the rank of captain, during the World War; for many years health officer of Kirkland and Clinton; aged 52; died, November 10, of angina pectoris.

**Archibald Tanner Banning,** Mount Vernon, N. Y.; Cincinnati (Ohio) College of Medicine and Surgery, 1873; formerly county coroner and health officer; one of the founders and on the staff of the Mount Vernon Hospital; aged 70; died, November 10.

**Lewis A. Van Wagner,** Sherburne, N. Y.; Albany Medical College, 1868; member of the Medical Society of the State of New York; health officer of Sherburne; formerly superintendent of the Brookside Crest Sanitarium; aged 77; died, November 10.

**Robert Clarence Jones,** Mobile, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1905; member of the Medical Association of the State of Alabama; served in the M. C., U. S. Army, during the World War; aged 46; died, November 6.

**Thomas Arthur Killip,** Rochester, N. Y.; University of Buffalo Department of Medicine, 1898; member of the Medical Society of the State of New York; since 1909 county coroner; aged 54; died, November 15, of typhoid fever.

**William Tillinghast Bull**, New Haven, Conn.; Columbia University College of Physicians and Surgeons, New York, 1902; aged 57; died, November 8, at the Hillcroft Sanitarium, Biltmore, N. C., following a long illness.

**George A. Clotfelter**, Hillsboro, Ill.; Missouri Medical College, St. Louis, 1893; served during the Spanish-American and World wars; aged 57; died, November 11, at the Hillsboro Hospital, of angina pectoris.

**Albert Byron Martin**, Oteen, N. C.; University of Georgia Medical Department, Augusta, 1910; member of the Medical Association of Georgia; served during the World War; aged 37; died, October 28, of tuberculosis.

**Edwin R. Westcot** ● Manistique, Mich.; Medical College of Indiana, Indianapolis, 1895; specialized in ophthalmology, otology, laryngology and rhinology; aged 56; died, October 31, following a long illness.

**Harry Clifton Mabley**, Cleveland; Western Reserve University School of Medicine, Cleveland, 1894; member of the Ohio State Medical Association; member of the board of education; aged 55; died, November 9.

**Charles Henry Jameson**, Estancia, N. M.; College of Physicians and Surgeons, Baltimore, 1884; member of the New Mexico Medical Society; aged 62; died suddenly, November 5, of cerebral hemorrhage.

**E. Gard Edwards**, La Junta, Colo.; University of Pittsburgh School of Medicine, Pittsburgh, 1897; member of the Colorado State Medical Society; aged 53; died, October 29, of cerebral hemorrhage.

**William E. Hunsberger**, Maiden Creek, Pa.; Jefferson Medical College of Philadelphia, 1867; member of the Medical Society of the State of Pennsylvania; aged 82; died, November 11, of pneumonia.

**Antonio Tirico**, Montclair, N. J.; University of Naples, Italy, 1900; member of the Medical Society of New Jersey; died suddenly, November 7, of cerebral hemorrhage, while attending a patient.

**Emanuel Jacob Brown**, Wyoming, Del.; Medical Department of the University of the City of New York, 1884; aged 46; died, October 26, at Lewisburg, Pa., of chronic nephritis and myocarditis.

**Annie Dorothea Payne**, Warsaw, N. Y.; Northwestern University Woman's Medical School, Chicago, 1894; aged 63; died, September 18, at Hastings, England, of cerebral hemorrhage.

**Job Rulon Dare**, Jamesburg, N. J.; Jefferson Medical College of Philadelphia, 1890; died, November 11, at a hospital in Philadelphia, of heart disease, following an appendectomy.

**Asa Nathan DeVault**, Chicago; University of Illinois College of Medicine, Chicago, 1900; member of the Illinois State Medical Society; aged 56; died, November 15, of pneumonia.

**James Grant Fisher** ● Plumville, Pa.; Department of Medicine of George Washington University, Washington, D. C., 1904; aged 49; died suddenly, November 1, of heart disease.

**Malcolm Edwin Kemp** ● Sigourney, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1903; aged 47; died, October 24, of carcinoma of the gallbladder.

**Byron Lee Dwinell**, Taunton, Mass.; Boston University School of Medicine, 1878; on the staff of the Morton Hospital; aged 74; died, October 29, following a long illness.

**George Henry Clark**, Holyoke, Mass.; Long Island College Hospital, Brooklyn, 1891; member of the board of education; aged 56; died, October 8, at the Holyoke City Hospital.

**Malvern Hills Price** ● Washington, D. C.; Medical Department of Columbian University, Washington, 1903; formerly a druggist; aged 58; died, November 5, of heart disease.

**Reuben A. Lockhart** ● Bridgeport, Conn.; Yale University School of Medicine, New Haven, 1891; formerly member of the board of education; aged 54; died, November 7.

**Thomas Henry Hull**, Brooklyn; Long Island College Hospital, Brooklyn, 1890; member of the Medical Society of the State of New York; aged 61; died, November 15.

**William Griffith**, Dunnellon, Fla.; College of Physicians and Surgeons, Baltimore, 1887; member of the Florida Medical Association; aged 59; died, October 25.

**George Washington Hoffman**, Ridgeway, Iowa; College of Physicians and Surgeons, Keokuk, 1891; also a druggist; aged 73; died, November 10, of carcinoma.

**Melville A. Hays**, New York; Georgetown University School of Medicine, Washington, D. C., 1900; aged 45; was shot and killed by a bandit, November 24.

**Louise Lamia**, New York; New York Medical College and Hospital for Women, 1886; aged 68; died, October 6, of heart disease and cerebral hemorrhage.

**Alexander Behrendt** ● Chicago (licensed, Illinois, 1884); aged 68; died, November 10, of an overdose of a hypnotic, while suffering from ill health.

**William A. Knox**, Chicago; Jefferson Medical College of Philadelphia, 1854; Civil War veteran; aged 92; died, October 30, of cerebral hemorrhage.

**Luther S. Brock** ● Morgantown, W. Va.; Jefferson Medical College of Philadelphia, 1874; formerly president of a bank; aged 80; died, November 10.

**Lilburn H. Colley**, Smithfield, Texas; College of Physicians and Surgeons, Keokuk, Iowa, 1873; aged 81; died, October 26, following a long illness.

**William Posey Mowrer**, Perry, Iowa; University of Nebraska College of Medicine, Omaha, 1897; aged 53; died, July 20, of heart disease.

**Wales W. Lewis**, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1909; aged 38; died, November 2, at West Palm Beach, Fla.

**Simon Willard Houghton**, Hazardville, Conn.; Bellevue Hospital Medical College, New York, 1879; aged 85; died, October 30, of senility.

**James M. Wells**, Houston, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1898; aged 58; died, November 2.

**Horace A. Lowery**, Sperry, Iowa; College of Physicians and Surgeons, Keokuk, 1876; aged 72; died, August 17, following a long illness.

**Albinus J. Merrill**, Jay, N. Y.; University of Vermont College of Medicine, Burlington, 1872; aged 78; died, October 31, of heart disease.

**Augustus W. Thornton**, San Diego, Calif.; F.R.C.S., England, 1853; formerly a practitioner in Washington; aged 91; died, October 27.

**Harry Porter Hall** ● Leominster, Mass.; Medical School of Maine, Portland, 1874; aged 72; died, November 1, of angina pectoris.

**Elmer Clark Tracy** ● White Plains, N. Y.; Medical Department of Columbia College, New York, 1885; aged 63; died, November 3.

**Charles Minor Blackford, Jr.**, Staunton, Va.; University of Virginia Department of Medicine, 1888; aged 59; died, November 6.

**Joseph Edward Scallon** ● Hancock, Mich.; University of Montreal (Que.) Medical Faculty, 1874; aged 71; died, November 9.

**Walter Franklin Nuzum** ● Madison, Wis.; Northwestern University Medical School, Chicago, 1908; aged 41; died, November 3.

**James W. Higgins**, Spokane, Wash.; College of Physicians and Surgeons, Keokuk, Iowa, 1889; aged 79; died in September.

**John William Cook**, Marlin, Texas; Atlanta (Ga.) Medical College, 1891; aged 68; died, November 4, as a result of food poisoning.

**Samuel Asbury Holmes**, Jerseyville, Ill.; Rush Medical College, Chicago, 1881; Civil War veteran; aged 82; died recently.

**Peter Eburton Walton**, Leasburg, Mo.; Missouri Medical College, St. Louis, 1881; aged 76; died, October 29, of heart disease.

**Simon H. Timm**, Brooklyn; University of Vermont College of Medicine, Burlington, 1885; aged 65; died, November 3.

**Samuel N. Cross**, Stockton, Calif.; Pulte Medical College, Cincinnati, 1877; aged 79; died, October 14, of diabetes.

**Norman McFarland**, New Pittsburg, Ind. (licensed, Indiana, 1897); Civil War veteran; aged 82; died, November 4.

**Robert J. Gregg**, Foster, Calif.; Jefferson Medical College of Philadelphia, 1866; aged 81; died, November 4.

**Chester Curtis Waller** ● Warren, Ohio; Baltimore (Md.) Medical College, 1898; aged 52; died, October 26.

**Judson A. Utley**, Galena, Ohio (licensed, Ohio, 1896); aged 81; died, November 3, following a long illness.

**Henry W. Gammell**, Madison, Minn.; Chicago (Ill.) Medical College, 1887; aged 66; died in October.

**Edgar Allen Hall**, Glasford, Ill.; Gross Medical College, Denver, 1898; aged 57; died, October 18.

## The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

### PEPTONE SOLUTION FOR HYPODERMATIC USE (ARMOUR) NOT ACCEPTED FOR N. N. R.

**Report of the Council on Pharmacy and Chemistry**

The following statement explaining the rejection of Peptone Solution for Hypodermatic Use (Armour) was submitted to Armour and Company. After considering the firm's reply, the Council affirmed its rejection and authorized publication of this report with the explanation that while Armour and Company were willing to undertake the standardization of the product, its value has not been established.

W. A. PUCKNER, Secretary.

Peptone Solution for Hypodermatic Use (Armour) is marketed by Armour and Company, Chicago, in ampules containing 1 Cc. of a 5 per cent. solution of Armour's Special Beef Peptone—a product claimed to contain 85 per cent. of protein, consisting principally of primary and secondary proteoses in the approximate proportion of one to six, and some peptone, and claimed to be free from tissue irritants and toxic split-protein products, such as histamin.

The product is advertised "as an aid in immunization, hypodermatically and orally" and refers, in the main, to the firm's peptone solution by hypodermic injection, although its intravenous use is also dealt with. Emphasis is given to the use of peptone in the treatment of asthma. Reference is also made to its use in such conditions as hay-fever, skin affections associated with asthma, cyclic gastro-intestinal attacks, urticaria, coryza of the spasmodic type, migraine, angioneurotic edema and pruritus.

The injection of proteins intravenously and by other routes has been proposed for the cure of a variety of disease conditions. Certain men have reported results which, in their opinion, are more beneficial than harmful, and have published papers which sincerely set forth their views. These papers deal with many diseases and disturbances, including migraine, arthritis, conditions of sensitization and urticaria, in some of which treatment along other lines has been more or less unsatisfactory. These papers record honest efforts to improve an unsatisfactory therapy. There is a growing view that not all phenomena of recovery from disease are explained by specific biologic reactions, and that some of the phenomena of disease may be the result of nonspecific protein reactions, the mechanism of which is not understood.

That striking results which may be apparently favorable to the patient occur following the use of foreign proteins must be conceded. That these results are not as uniformly favorable as they appear to the enthusiastic worker is also certain.

Intravenous medication—some of it wise, much of it foolish—has greatly increased during recent years, and it is not surprising that foreign proteins should be used in the hope of accomplishing something. This has gone to such lengths and absurdities, however, that it becomes a serious question whether the best interests of medicine are served by the recognition of methods, the real value of which is not established, the limitations and dangers of which are not understood, and the general employment of which, instead of speedily determining the question of actual value, in large part contributes to the profits of those interested in the sale of the products used.

The Council voted not to accept Peptone Solution for Hypodermatic Use (Armour) because it is an unstandardized mixture about which little is known, and because its acceptance would be taken as an endorsement of the use of peptone for intravenous use, presumably for all the conditions in which its employment has been reported.

The Council wishes it to be understood that in not accepting this product there is no intention of opposing the legitimate use of protein preparations by those who wish to proceed further in the study of nonspecific protein therapy. Those who wish to make such studies should bear in mind, however, that peptone, while relatively less harmful than some other products used for the same purpose, is of indefinite composition, and that no standards are provided to insure its uniform potency.

## Correspondence

### THE HISTORY OF HYPERTROPHIC PYLORIC STENOSIS

*To the Editor:*—Recently while reviewing the literature on hypertrophic pyloric stenosis, I found a matter of some historical interest, to which I desire to call your attention. John A. Foote (*Am. J. Dis. Child.* 15:351 [May] 1918), Harry M. Richter (in Abt's "Pediatrics," 1924, Chapter LI) and Louis W. Sauer (*Arch. Pediat.* 41:145 [March] 1924) call attention to the book of George Armstrong, "An Account of the Diseases Most Incident to Children from Their Birth to the Age of Puberty" (London, 1777), as containing the first description of this condition. It happens to be my good fortune to possess a book by the same author, published in London in 1771, which describes this condition. It is called "An Essay on the Diseases Most Fatal to Infants, to Which Are Added Rules to Be Observed in the Nursing of Children: With a Particular View to Those Who Are Brought Up by Hand," by George Armstrong, M.D., the second edition, with additions, London, printed for T. Cadell, in the Strand, MDCCLXXI. This contains apparently the first description of the condition.

EDGAR B. FRIEDENWALD, M.D., Baltimore.

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### PARATHYROID CONTROL OF GASTRO-ENTERIC FUNCTION

*To the Editor:*—What is the effect of parathyroidectomy on gastro-enteric secretion? I believe that G. Artom (*Policlinico*, October, 1922) found that parathyroid deficiency was attended with deficiency of normal gastro-enteric secretion. Artom's article has not been epitomized in your current medical literature columns. It is generally recognized that the thyroid hormone intensifies the action of epinephrin. Is it possible that the parathyroid hormone has normally the function of intensifying the actions of the gastro-enteric hormones, and gastric and duodenal secretions, thus effecting normal digestion of foodstuffs? Winter and Smith (*J. Physiol.* 58:108 [Oct.] 1923) find that parathyroid administration intensifies the action of insulin, the hormone associated normally with intestinal absorption of digested carbohydrates. May such an intensifying action of parathyroid hormone on the action of gastric and duodenal secretions explain the good effects of parathyroid administration in sprue reported by Harold H. Scott (*Brit. M. J.* 2:1135 [Dec. 15] 1923)?

SEBASTIAN L. RODRIGUES, M.B.,
Bombay University, India.

ANSWER.—We have no reliable or conclusive observations on the conditions of the alimentary tract in cases of tetany of definite parathyroid origin in man; but since we know that abnormal states of the central and the peripheral nervous systems frequently induce disturbances of the alimentary tract, such disturbances of the intestine may follow marked symptoms of tetany in man, that is, the tetany that follows removal of two or more of the parathyroids in surgery of the thyroids. In the experimental animal (dogs) the tetany that follows complete extirpation of the parathyroids is usually accompanied by anorexia, vomiting, depression of gastro-intestinal

motility (Carlson: *Am. J. Physiol.* **30**:309, 1912), and some decrease in gastric (Keeton: *Am. J. Physiol* **33**:25, 1914), pancreatic, intestinal and bile secretions (Stoland: *Am. J. Physiol.* **33**:283, 1914. Artom: *Arch. di Fisiol.* **20**:369, 1922). If the tetany symptoms are controlled by diet or by calcium salts by mouth, the gastric secretion after complete parathyroid tetany remains normal in quantity and quality (Peacock and Dragstedt: *Am. J. Physiol.* **64**:424, 499 [May] 1923). This seems to apply also to gastro-intestinal motility. There is some evidence, however, that removal of the parathyroids alters the gastro-intestinal mucosa in the direction of greater permeability (Dragstedt: THE JOURNAL, Nov. 4, 1922, p. 1593. Luckhardt and Compere: *Proc. Soc. Exper. Biol. & Med.* **21**:523, 1924), and the fact that tetania parathyreopriva can be controlled by an aciduric diet (Dragstedt: *Am. J. Physiol.* **59**:483, 1922; **64**:424 [May] 1923; **65**:368, 1923) seems to show that the symptoms are due to toxic substances absorbed from the intestine, possibly facilitated by some decrease in the blood and tissue calcium owing to greater intestinal permeability. There is no evidence that a decrease in the digestive secretions is a necessary or important link in the series of events that lead to tetany after extirpation or injury to the parathyroid glands.

The reports of the effects of giving parathyroid by mouth (fresh or dried gland) in man and animals are so contradictory that the question must be considered an open one, except in this particular, that such parathyroid feeding to parathyroidectomized animals fails to control the tetany and prolong or save the life of the animal. Reviewing the subject of control of tetany in 1921, Boothby (*Endocrinology* **5**:424, 1921) says: "The results obtained from treatment with parathyroid extract have, on the whole, proved disappointing, and the best clinical results have been obtained from the administration of calcium." This is equally true today. This does not necessarily mean that the parathyroids do not work by a hormone mechanism. It does mean that if they work by the hormone mechanism, the hormone is not present in the gland preparations so far available, or if present, it fails of absorption in active form from the intestine. This fact must be kept in mind when we try to evaluate the reports showing beneficial effects of parathyroid therapy in man in maladies that have not been shown to be of parathyroid origin. As noted above, there is some evidence of disturbance of the calcium balance in the body following parathyroidectomy and in idiopathic tetany (MacCallum and Voegtlin: *J. Exper. Med.* **11**:118, 1909. Cruickshank: *Biochem. J.* **17**:13, 1923. Salvesen: *J. Biol. Chem.* **56**:443 [June] 1923), although some observers have denied it; but we do not yet know the precise mechanism of this upset. However, the calcium metabolism and the calcium balance can be upset by other factors, such as faulty diet or too little sunlight, and we have no evidence at present that these upsets involve parathyroid depression. Grove and Vines (*Proc. Soc. Roy. Med., Therap. Sect.* **16**:18, 1923) report deficiency of blood calcium, and improvement or cure by parathyroid feeding in chronic skin ulcers, gastric or duodenal ulcers, phlebitis, sciatica, diphtheria, scarlet fever, influenza, nasal infections, gumma, herpes zoster, pernicious anemia, otitis media and carcinoma. This would be important, were it true. But these results look too good, in view both of what we know and what we don't know of the etiology of these maladies. Altogether, the work of Grove and Vines appears to be uncritical.

Scott (*Brit. M. J.* **2**:1135 [Dec. 15] 1923) has reported good results from parathyroid feeding in one case of sprue. The etiology of sprue is still an open question. According to Smith's (THE JOURNAL, Nov. 15, 1924, p. 1549) experimental work, sprue is an infection from *Monilia psilosis*, superinduced in an individual whose resistance to the infection has been reduced by such factors as faulty diets and gastro-intestinal infections. In gastro-intestinal infections (dysentery, diarrhea), there may be an upset in the internal calcium balance both through the toxemia and owing to increased intestinal permeability. This, again, does not necessarily indicate impairment of parathyroid functions, except in the way that all organ activities are impaired by marked gastro-intestinal disturbances. McCarrison (The Thyroid Gland, 1917, p. 152) believes that intestinal intoxication induces changes in the parathyroids, but the functional significance of such histologic change, if such is actually produced, except as accompanying moribund states, remains to be determined. To what extent such possible decrease in the blood and tissue calcium may in turn augment or initiate disease symptoms is a matter for experimental and clinical investigation. The present status of the question may therefore be summed up thus: Parathyroid organotherapy does not control or cure parathyroid deficiency symptoms in animals. But these, in a large measure, can be controlled by diets (Dragstedt: *Am. J. Physiol.* **59**:483, 1922; **64**:424 [May] 1923; **65**:368, 1923) or by large doses of calcium salts (especially calcium lactate) by mouth (Parhon and Urechie: *Neurol. Centralbl.* **26**:1099, 1907. MacCallum and Voegtlin: *Bull. Johns Hopkins Hosp.* **19**:91, 1908. Luckhardt and Goldberg: THE JOURNAL, Jan. 13, 1923, p. 79). Since even large doses of calcium salts by mouth appear to be well tolerated by most persons, and appear to be not injurious, the value of calcium as an additional therapeutic measure may be tried even in maladies known not to be directly caused by parathyroid impairment. But the value of such calcium therapy can be established only by careful statistical methods on a large series of patients, especially in self-limiting maladies. At present, parathyroid organotherapy has only an experimental status. It is of little or no value in animals, and we do not know what is in the parathyroid preparations on the market. This does not reflect on the ethical manufacturers of the product. The parathyroids are so small, so variable in position, and so intimately connected with the thyroid glands and the thymus that one can be certain of pure parathyroids only after histologic examination of each glandule, a procedure obviously impossible in the wholesale manufacture of the product. Vines (*Brit. M. J.* **2**:559 [Sept. 29] 1923) has described a method of standardizing parathyroid extract, based on the efficacy of the extract to remove guanidin from a solution; but the specificity or value of this standardization may be questioned, because of the uncertainty in regard to the rôle of guanidin in the pathogenesis of tetany.

The observations of Winter and Smith (*J. Physiol.* **58**:108 [Oct.] 1923) are interesting but inconclusive. They injected hypodermically and intravenously parathyroid extract into rabbits, and found that subsequently a smaller dose of insulin sufficed to produce hypoglycemia symptoms. We do not know what there may not be in the parathyroid extracts used, but foreign proteins and protein split products are certainly present. In such experiments, controls must be made with extracts of other organs, such as lymph glands, kidney and muscle, as well as with peptones, egg albumin and milk proteins. Only when such control experiments are negative may we conclude that the effects reported by Winter and Smith are specific for the parathyroids or the parathyroid hormone. Such control experiments were not reported by these observers.

## LAVEX

*To the Editor:*—Can you tell me what is in the preparation called "Lavex"? It is put out by the Lavex Chemical Company, Kansas City, Mo. Several have asked me if the claims they are making for it are true. Please omit my name and address. M.D., California.

ANSWER.—From material in our files, we get the impression that "Lavex" is a later name for what used to be called "Maignen Antiseptic Powder," put out some ten years ago by the so-called "Maignen Institute for the Study of Bacterial Diseases" of Philadelphia. At that time it was claimed to be a mixture of calcium hydroxid, sodium carbonate, aluminum sulphate and boric acid. As long ago as November, 1914, THE JOURNAL published a report of the Council on Pharmacy and Chemistry on Maignen's Antiseptic Powder, and the matter has been reprinted in "The Propaganda for Reform," Vol. I. Later, apparently, the name of the company putting this out was changed to "Maignen Chemical Company," which still did business in Philadelphia. In 1915, the government declared Maignen Antiseptic Powder misbranded in that it was sold under false and fraudulent claims.

## DIAGNOSIS OF HEALED TUBERCULOUS LESIONS

*To the Editor:*—Can a healed tuberculous pulmonary lesion be differentiated from a healed pulmonary lesion caused by pneumonia, influenza or other lung infection? M. S.

ANSWER.—Many healed tuberculous lesions are not susceptible of discovery or diagnosis by physical examination, coming into notice only on the roentgenographic plate. Such are, of course, small and usually situated in the parenchyma of the lung. Cavities the result of tuberculosis are readily discovered and usually recognized without great difficulty. They are ordinarily situated in the apexes, which fact, together with the history of the patient, makes the case clear. Cicatrices, also being similarly located, and having the same sort of history, may, if large enough to produce variations of normal breath sounds, be recognized as of tuberculous origin. Influenza often presents pulmonary findings in the

shape of catarrh of the apexes. These moist signs disappear in a short time and thus pass out of consideration. While the present question does not deal with chronic pneumonia, with its contractions and fibrosis, it may not be amiss to mention that such chronic conditions are not easily differentiated from tuberculosis. Nevertheless, it is possible to do so. Should the sputum not give the desired information, recourse should be had to the subcutaneous tuberculin test. Influenza and pneumonia may both be complicated by pleurisy and empyema. These have a history that is usually remembered by the patient, especially if there has been surgical intervention. Here, again, the tuberculin test (subcutaneous) may be applied. The differential diagnosis between old pleuritic adhesions of tuberculous origin and those of pneumonic or influenzal causation might possibly offer difficulty until the case and its history have been carefully gone over. In the main, then, it may be said that a differentiation is possible.

### COMPULSORY VACCINATION AGAINST SMALLPOX

*To the Editor:*—Will you kindly give me information as to the following: Has there ever been a Supreme Court decision as to the constitutionality of laws requiring universal vaccination against smallpox? This state has a county option law as to compulsory education and compulsory vaccination. This county has applied both laws, which makes a fact of universal vaccination for certain ages—from 7 to 14, inclusive.

BARTON B. McCLUER, M.D., Speedwell, Va.

ANSWER.—The United States Supreme Court has held that the state can, under its police power, enact a compulsory vaccination law (*Jacobson* v. *Massachusetts*, 197 U. S. 11). The same court has held that the state may delegate to a municipality power to exclude an unvaccinated child from school (*Zuchi* v. *King*, 260 U. S. 174). The almost uniform trend of court decisions is to the effect that the state, under its police power, may enforce vaccination under such conditions as may be determined by the legislature.

### WHOLE GRAIN WHEAT

*To the Editor:*—Can you give me any information relative to a product called "Whole Grain Wheat," made by a company of this name in Chicago and patented by one C. H. Woodward? They claim great things for this product.

JAMES K. ANDERSON, M.D., Deerwood, Minn.

ANSWER.—"Whole Grain Wheat" is, apparently, just what it is claimed to be, whole grain wheat, and obviously has the dietary virtues and limitations of wheat. The product is apparently merely a well known food substance exploited by quackish methods. We understand that the concern that puts it out attempted originally to advertise it in a truthful and conservative manner but, apparently, the public would have nothing of it under those conditions. Whole Grain Wheat has now been endowed with the miraculous hokum of the crudest "patent medicine."

### GRAHAM'S NEUTROIDS

*To the Editor:*—Kindly give me any information you may have of "Dr. Graham's Neutroids," distributed by the Graham Sanitarium, Inc., of New York—"The healthful way to reduce." A patient is threatening to take them and have advised holding off until we hear from you. If published, please omit my name.

M.D., New York.

ANSWER.—The Graham Sanitarium and "Neutroid Tablets" were dealt with in some detail in the Propaganda department of THE JOURNAL, Sept. 30, 1922. Neutroids was found on analysis to contain:

| | |
|---|---|
| Iodol | 50 per cent. |
| Magnesium carbonate | 43 per cent. |
| Starch | 4 per cent. |
| Talc | 3 per cent. |

While the stuff was sold as being nontoxic, the fact is that Iodol is distinctly poisonous, even when applied externally.

### SCHICK TEST AND TOXIN-ANTITOXIN

*To the Editor:*—In cases showing positive reactions to the Schick test, what dangers may ensue if, after the toxin-antitoxin treatment has been given, it should become necessary, before immunity is developed, to give antitoxin treatment on contact or development of diphtheria?

CHARLES J. REILLY, M.D., Beatrice, Neb.

ANSWER.—There would be no danger. Antitoxin given in the manner indicated interferes with the immunizing action of the toxin-antitoxin.

### "URTICARIA AFTER BATHING"

*To the Editor:*—In reference to a recent note by a Wisconsin physician on "Urticaria After Bathing" (THE JOURNAL, November 8, p. 1529), it was well known by most of the boys of Wisconsin that in July and August the spring water lakes of that region contained a green film, apparently of vegetable origin, floating on the water. To some persons, this was a skin irritant, but protection was readily afforded by washing it off immediately in clean water. Direction of the wind would control the accumulation of this, so that only the lee shore was covered by it, and explained the daily variation.

F. J. CARLSON, M.D., Oakland, Calif.

## *Medical Education, Registration and Hospital Service*

### COMING EXAMINATIONS

ARIZONA: Phoenix, Jan. 6. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

COLORADO: Denver, Jan. 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DELAWARE: Wilmington (Regular and Homeopathic), Dec. 9-11. Sec., Dr. H. W. Briggs, 1036 Jackson St., Wilmington.

KENTUCKY: Louisville, Dec. 9. Sec., Dr. A. T. McCormack, State Board of Health Bldg., Louisville.

MARYLAND: Baltimore, Dec. 9-12. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MINNESOTA: Minneapolis, Jan. 6-8. Sec., Dr. Thomas McDavitt, 734 Lowry Bldg., St. Paul.

NORTH DAKOTA: Grand Forks, Jan. 6. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 10-12. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

OREGON: Portland, Jan. 6-8. Sec., Dr. U. C. Coe, 1208 Stevens Bldg., Portland.

RHODE ISLAND: Providence, Jan. 1-2. Sec., Dr. B. U. Richards, State House, Providence.

UTAH: Salt Lake City, Jan. 6. Dir. of Regis., Mr. J. T. Hammond, State Capital, Salt Lake City.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 720 Anchor Bldg., Roanoke.

### Pennsylvania July Examination

Dr. J. George Becht, secretary, Pennsylvania Board of Medical Education and Licensure, reports the written and practical examination held at Philadelphia and Pittsburgh, July 8-12, 1924. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 245 candidates examined, 238 passed and 7 failed. Four candidates were licensed by reciprocity. The following colleges were represented:

| PASSED<br>College | Year Grad. | Number Licensed |
|---|---|---|
| University of Colorado | (1923) | 1 |
| Georgetown University | (1923) | 2 |
| George Washington University | (1923) | 1 |
| Howard University | (1923) | 2 |
| Rush Medical College | (1923) | 1 |
| College of Physicians and Surgeons, Baltimore | (1908) | 1 |
| Johns Hopkins University | (1909), (1923) | 2 |
| Harvard University | (1922) | 1 |
| University of Michigan | (1922), (1923, 2) | 3 |
| University of Minnesota | (1923) | 1 |
| University of Nebraska | (1923) | 1 |
| Columbia University | (1923) | 1 |
| University of Buffalo | (1923) | 1 |
| Eclectic Medical College, Cincinnati | (1923) | 1 |
| Ohio State University College of Homeo. Med. | (1922) | 1 |
| University of Cincinnati | (1923) | 1 |
| Hahnemann Medical Coll. and Hosp. of Philadelphia | (1923) | 18 |
| Jefferson Medical College | (1922, 7), (1923, 57) | 64 |
| Temple University | (1923) | 21 |
| University of Pennsylvania | (1921, 2), (1922, 18), (1923, 42) | 62 |
| University of Pittsburgh | (1923) | 36 |
| Woman's Medical College of Pennsylvania | (1922), (1923) | 2 |
| Vanderbilt University | (1903) | 1 |
| University of Vermont | (1920), (1923) | 2 |
| Medical College of Virginia | (1923) | 1 |
| McGill University Faculty of Medicine | (1923) | 1 |
| Queen's University Faculty of Medicine | (1922) | 1 |
| Univ. of Toronto Faculty of Med. | (1905), (1922), (1923, 6) | 8 |

| FAILED<br>College | Year Grad. | Number Failed |
|---|---|---|
| Kentucky School of Medicine | (1903) | 1 |
| University of Maryland | (1916) | 1 |
| Leonard Medical College | (1904) | 1 |
| Woman's Medical College of Pennsylvania | (1923) | 1 |
| Meharry Medical College | (1893) | 1 |
| University of Petrograd, Russia | (1921)* | 1 |
| University of Berne, Switzerland | (1918)* | 1 |

| LICENSED BY RECIPROCITY<br>College | Year Grad. | Reciprocity with |
|---|---|---|
| Howard University | (1910) | Maryland |
| University of Michigan | (1912) | Michigan |
| Cornell University | (1903) | New York |
| University of Pennsylvania | (1919) | Tennessee |

* Graduation not verified.

# Book Notices

EYE HAZARDS IN INDUSTRIAL OCCUPATIONS. By Louis Resnick and Lewis H. Carris. Paper. Price, $1.50. Pp. 247, with 59 illustrations. New York: National Committee for the Prevention of Blindness, Inc., 1924.

As stated in the foreward, this volume replaces the previous publication of the same title issued in 1917. It contains all the approved material of the former book with all that has developed in methods of prevention of eye accidents in the last few years. While Resnick and Carris prepared this book, they had the assistance of many organizations and individuals interested in this type of work. The first chapter takes up eye hazards of industry in a general way, calling attention to the fact that there are in this country 15,000 industrially blind persons and that the solution of the problem lies in legislation, education and organized accident prevention activities in industry. The second chapter deals with the nature and causes of eye injuries, pointing out the greater liability of accidents in the metal industries. The third chapter is devoted to the elimination of eye hazards by "engineering revision" in contradistinction to the older method of prevention by mechanical guarding. The fourth chapter outlines the accidents and gives examples of the means of protection, such as goggles and masks. The fifth chapter, on first aid treatment, puts the "shop oculists" in their proper place by urging that the penalty of immediate discharge be imposed if they attempt to remove foreign bodies from the eyes of fellow workmen. Equipment for and means of treating eye injuries are detailed. The sixth chapter reveals the extent of subnormal vision in industry, its effects on plant efficiency and the good results of correction. The seventh chapter deals with occupational diseases of the eye. The eighth chapter gives tables showing the amount of illumination in foot candles for various types of work, and outlines the requirements of industrial lighting. The ninth chapter takes up the education of the state, the employer and the employee in the methods, obligations and economics of preventive measures. The tenth chapter deals with the safety movement in general and details the work of each organization, as the National Safety Council and the National Committee for the Prevention of Blindness. An appendix outlines the industrial poisons presenting hazards to the eyes. A second appendix gives the goggle code of the American Steel and Wire Company. A third appendix consists of an extensive bibliography. This volume should be in the hands of every employer and industrial surgeon. It is well written, is profusely illustrated, and contains more material on this subject than anything so far published.

EPIDEMIC ENCEPHALITIS (ENCEPHALITIS LETHARGICA). By Arthur J. Hall, M.A., M.D., F.R.C.P., Professor of Medicine, University of Sheffield. Cloth. Price, $3.75. Pp. 229, with 17 illustrations. New York: William Wood & Co., 1924.

This monograph, by one of the earliest and best known students of encephalitis in England, is an expansion of the Lumleian Lectures delivered before the Royal College of Physicians of London in 1923. It gives in a readable and well arranged form and in considerable detail all the essential facts about the disease. There are chapters on the history; epidemiology; morbid histology, bacteriology and experimental pathology; clinical manifestations; later manifestations or residua; differential diagnosis, prognosis and treatment. The bibliography is probably the most complete ever compiled on this or perhaps any other subject in medicine. It includes all of that given in the official British report of 1922, and a great deal more. To have thus brought home to us the vastness of the literature makes us less inclined to find fault with the author for sundry omissions. Thus, in the discussion of the urinary system, the extensive work of William Boyd of Winnipeg on the renal changes is not mentioned. In view of its interest, polyuria is inadequately discussed, and the same is true of the spinal fluid changes. In connection with the sequelae, events have moved so rapidly that the book does not contain the latest information. The important monograph of Gabrielle Lévy of 1922 is not mentioned, nor is such an important histopathologic contribution on the parkinsonian syndrome as that of J. C. McKinley, published in 1923. The book is not as well digested as that of Felix Stern (in German) of 1922, but it is less ponderous in style and has valuable illustrations and charts. Altogether, the book should prove a useful and convenient addition to the library of all physicians interested in the disease, whether specialists or not.

REGENERATION FROM A PHYSICO-CHEMICAL VIEWPOINT. By Jacques Loeb, Member of the Rockefeller Institute for Medical Research. Cloth. Price, $2. Pp. 143, with 115 illustrations. New York: McGraw-Hill Book Company, Inc., 1924.

This is not a general treatise on the subject of regeneration, but contains an account of the author's extensive investigation on regeneration in *Bryophyllum*. In this particular plant, the author has been able to show that there is a quantitative relation between the amount of material in the original part, and the amount of regeneration that this part is capable of producing. He has also shown that the effect of gravity on regeneration in plants is due, at least in part, to the collection of tissue sap in the lowest part of stem or leaf. In the concluding pages the author admits that, in order to apply the principle of mass relation in regeneration in animals, we must be able to measure with a certain degree of accuracy the quantity of material available for the synthetic processes underlying regeneration. This is possible in plants, where the leaf is the main organ for the production of this material, and where the light is the main source of energy for the production of the material. Unfortunately, it is not so easy to control the mass of available material for regeneration in animals. Indeed, we may say that at present this is impossible in animals, and it is therefore an open question what bearing this research has on the much more complex problem of regeneration or absence of regeneration in animals. The monograph is beautifully illustrated.

PUBLIC HEALTH SERVICES IN AUSTRIA. By Regierungsrat Dr. Hermann Schroetter. League of Nations, Health Organisation. Paper. Pp. 82. Geneva: League of Nations, Distribution Service.

PUBLIC HEALTH SERVICES IN GERMANY. Dr. Gottfried Frey, Medical Director, Reichsgesundheitsamt, Berlin. League of Nations, Health Organisation. Paper. Pp. 60. Geneva: League of Nations, Distribution Service.

The topics included in a questionnaire sent by the Health Organization of the League of Nations are the basis of these monographs. The details of federal, communal and civic legislation, and administrative machinery, are covered by the inquiry, under the following headings: notifiable diseases, including the list of those required to be notified, authority for inspection, laboratory study, and the performance of necropsies; statistical tabulations, including birth and death registration, the legal definition of a stillbirth, the computation of the census, and published reports; hospitals, asylums and similar institutions; control of tuberculosis and venereal diseases; protection of maternity, infancy and childhood; school hygiene; the campaign against alcoholism; housing; water supplies; drainage; public baths, and food control.

AN OUTLINE OF ENDOCRINOLOGY. By W. M. Crofton, B.A., M.D., Lecturer of Special Pathology, University College, Dublin. Cloth. Price, $2.25. Pp. 126, with 50 illustrations. New York: William Wood and Company, 1924.

This little book presents in a readable manner the things that are known—and a few things not known—about the endocrines. It excels in scientific precision and illustrations on histology and pathology of the ductless glands. One notes with regret, therefore, that the author shares with certain other endocrinologists the somewhat uncritical and optimistic attitude toward the therapeutic uses of some of the endocrine products; e. g., pluriglandular mixtures, or the oral administration of pancreas in diabetes. For bodies of the insulin type, the author proposes the interesting term, adapters. "The metabolism, both anabolism and catabolism, of carbohydrate, fats and proteins in the tissue cells is dependent on the presence of a heat stable part of a compound ferment which must be attached to them; or, in the language

of immunity, they must be sensitized before the heat-labile ferment of the cell can use them as building stones or break them down as a source of energy." Ehrlich's amboceptors he considers to be the adapters required by protein metabolism. He believes that these are produced also by the pancreas, and that a deficiency of these is responsible for the poor resistance against bacteria so characteristic of diabetes. The idea that amboceptor is mainly formed in the pancreas is a view not generally held. However, the word adapters—no matter where they may be formed—strikes one as preferable to the longer term.

GONORRHOEA. By David Thomson, O.B.E., M.B., Ch.B., Honorary Pathologist and Director of the "Pickett-Thomson" Research Laboratory, St. Paul's Hospital. With Contributions by David Lees, D.S.O., M.D., F.R.C.S.; Claude H. Mills, M.R.C.S., L.R.C.P.; Robert Thomson, M.B., Ch.B., and Kenneth MacLachlan, M.B., Ch.B. Cloth. Price, $12.75. Pp. 519, with illustrations. New York: Oxford University Press, 1924.

This presents a complete collection of the available data concerning gonorrheal infection. The literature is carefully abstracted, and personal investigations by the authors are added to this material. The biology of the gonococcus is thoroughly discussed, and all the methods of studying it are described. The problems of immunity, the complement fixation test, vaccine therapy, serum therapy, chemotherapy and thermotherapy are also included. A prominent feature is the diligence and thoroughness with which the world's literature is scrutinized. The book is an important reference work, and should not be overlooked by any one who wants to go thoroughly into the study of gonorrheal infection.

THE SPRITE. The Story of a Red Fox. By Ernest Harold Baynes. Cloth. Price, $1.75. Pp. 134, with illustrations. New York: The Macmillan Company, 1924.

Mr. Baynes is a lover of animals, who is in no sense of the type of either the nature faker or the fanatic. His contributions to the campaign for the advancement of medical science through well controlled animal experimentation are beginning to be known to every physician; his work should be encouraged by the medical profession. The present book, although written primarily for the child, will be found equally interesting to the adult. It is the story of a red fox, told in a simple, straightforward style and almost perfectly illustrated by excellent photographs. Here is an opportunity to give the child proper instruction concerning wild animals and to give it at the same time a correct point of view.

THE THEORY OF DECREMENTLESS CONDUCTION IN NARCOTISED REGION OF NERVE. By Genichi Kato, Professor of Physiology, Director of Physiological Institute, Keio University, Tokyo. Cloth. Price, $3. Pp. 166, with illustrations. Tokyo: S. Kodachi, 1924.

This is a detailed report of an extensive investigation on the question whether narcosis or injury causes a decreased rate and intensity of conduction in the nerve. The literature bearing on this question is analyzed and discussed, and numerous experiments with illustrations of the details, showing, according to the author, that the nervous impulse does not undergo decrement either in intensity or in velocity during its passage along the narcotized region of nerve.

CHEMICAL DYNAMICS OF LIFE PHAENOMENA. By Prof. Otto Meyerhof. Cloth. Price, $3. Pp. 110, with charts. Philadelphia: J. B. Lippincott Company, 1924.

There are chapters on the physical and chemical mechanism of cell respiration, auto-oxidation in the cell, chemical relation between respiration and fermentation, the transformation of energy in muscle, and the energetics of cell processes, with a bibliography of 163 titles, and a short index. These subjects are treated in a masterful way, as the author is one of the leading research men in this field.

PATOLOGIA DE LA HIPÓFISIS. Por el Profesor Dr. A. Schiff. Paper. Price, 3 pesetas. Pp. 57. Madrid, Paracelso, 1923.

This is a brief but very good review, in Spanish, of the essential problems connected with pathologic changes in the hypophysis. The author takes up the contributions and points of view of most of the important experimental and clinical workers in this field. The discussions and conclusions are well considered, and within the facts.

## Miscellany

### AN APPRECIATION BY GENERAL PERSHING

#### A Compliment by General John J. Pershing to the War Service of the Medical Profession

At a recent meeting of the Medical Club of Philadelphia, at which General John J. Pershing was invited to be guest of honor, the following message was read, representing an official expression to the members of the medical profession in appreciation of their services in the World War:

"Your profession has ever rendered unselfish service to the cause of humanity. In peace and in war our medical men have shown their loyalty and devotion to country. The sacrifices you have made in the interest of science and humanity have marked you as men of courage, with a fine sense of loyal citizenship.

"Through the indefatigable efforts of leaders in the study of the prevention of disease, the usual camp diseases, typhoid fever, infectious diarrheas, malaria and yellow fever, formerly the greatest hazards to the success of military operations, have been reduced to insignificant concern. These conquests of yours have in general stimulated the industrial progress of tropical countries, and in particular have recently removed the barrier to the consummation of one of the greatest engineering accomplishments of all times. The mobilization for the World War gave practical evidence of the control which principles of preventive medicine have made possible.

"I have no doubt that the great pandemic of influenza, with its ghastly toll, has stimulated scientific endeavor so that preventive measures will be discovered which will preclude a recurrence of the periodic holocaust which clouded the closing days of the World War.

"These achievements prepare you for an intimate conception of the preparedness program under our military policy. The events leading up to our participation in the World War have rapidly become dim in memory, but I know you will recall the precipitate way in which we mobilized and organized our forces to play their surpassingly brilliant part in the final defeat of the Central Powers. America added new blood, which, like old wine, exhilarated the forces of our allies and gave the final blow to our mutual enemy and a glorious victory for the right.

"Our traditional lack of plans for the defense of our country and the principles for which its people have always stood resulted in an unnecessary cost in lives and money. But, I believe, the lesson has been learned. Congress has by the act of June 4, 1920, provided for the organization of a truly effective citizen army, to be developed in time of peace for the undesired event of war.

"Your profession has always been ready and willing to fulfil the citizen's obligation for the defense of the country, as proved by your eager response in the World War, in which your accomplishments reflected the highest credit on your personnel. The first active participation of the United States after the declaration of war was the assignment to active duty with the British in May and June, 1917, of some 800 young American physicians, who volunteered their services immediately after we cast our lot with the Allies. These men were assigned to front line work, where they 'carried on' with rare devotion to duty and to the credit of the nation.

"Your response to the country's need resulted in the development of a large and efficient machine, composed of about 35,000 officers and more than 250,000 men, who contributed vastly to the ultimate success of American arms.

"The advantage of organization for any service is indisputable. You have recognized that by the establishment of your great American Medical Association. Peacetime organization of the medical profession lends itself admirably to assimilation as trained personnel for service in the event of emergency under the National Defense Policy.

"Your service is a twofold one:

"1. As leaders in your community, having expert knowledge of the benefits of physical development, leadership and discipline afforded by military training, you are better qualified than any other group of men to keep before our citizens the importance of their support of the principles of defense.

"2. As potential members of the medical service of the Army of the United States, knowing the inestimable value of adequate organization in time of peace for service in emer-

gency, you can make possible the development of an harmonious and efficient machine ready for service without tedious delays.

"You know, perhaps better than any other class of men, the advantage of these basic principles. You can, because of the broadness of view your life work inculcates, appreciate the importance of an adequate military organization so developed in time of peace as to assure protection of the country.

"The medical history of the World War made by your profession is one of bright achievement, but the task is unfinished. The nation having provided a policy for the creation of a citizen army, your obligation to aid in the fulfilment of the wise provision is obvious. The nation has confidence in you, and I feel assured that the organization of the medical service for future emergencies will not fail."

## STATE CARE OF MENTALLY DISEASED

The program of the Massachusetts Department of Mental Diseases includes the systematic study of means to decrease the occurrence of insanity and feeblemindedness and by other means to relieve the commonwealth of the burden of their support. The department believes that Massachusetts is the first state to undertake such a study. The program for the feebleminded includes 1. Identification: School clinics for the examination of pupils three or more years retarded not only help in revealing a number of feebleminded children but also are a means of advising parents and teachers as to the care of children showing mental deviations that might develop into serious abnormalities. Preschool clinics for behavior problems have been established for the same purposes. 2. Registration: A census of the feebleminded is kept. 3. Education: The training of the feebleminded is directed toward preparing them for useful employment outside an institution. 4. Supervision: The expense of institutional support prompts the effort to return the feebleminded to the community after a period of institutional training. New construction is estimated to cost $1,500 per bed, and maintenance not less than $300 per inmate. 5. Segregation: Certain cases will be recognized as incapable of living safely in the community, even under careful supervision. These will not be paroled. The establishment of small psychopathic hospitals and of outpatient mental hygiene clinics, and the examination of certain persons before the courts are further measures intended to disclose potential mental disease. The clinics are placed in general hospitals, with a psychiatrist, a psychologist and a social worker on the staff. Research studies are being directed along several lines, including factors other than heredity in the etiology of feeblemindedness; the relation of focal infections to acute mental disease; biologic investigations of dementia praecox cases and epileptics; the relation of epilepsy to infantile convulsions, and the results of medicinal treatment of neurosyphilis.

## RESEARCH IN SOUTH AFRICA

The report of the South African Institute for Medical Research for 1923 records the investigations and diagnostic work performed by the Routine Division and the fields studied by the Research Division. The occurrence of an epidemic of cerebrospinal meningitis afforded material for the study of the prevalence of various strains of meningococci in natives and in Europeans. Filter-passing viruses from cases of influenza and from the blood serum of horses affected with horse-sickness were isolated and studied. Research on the effects of cold on the vitality of cysticerci in beef and pork was completed in 1923, and rules for the disposition of affected meat are given in the annual report. The hosts of *Schistosoma haematobium* were investigated, and a moving picture film made, depicting the life history of schistosomes, the mode of entrance of the cercariae through the skin, adult worms in the tissue of experimental animals; and the treatment of human cases by antimony and potassium tartrate injections. Studies in silicosis have reproduced, in experimental animals, the characteristic lesions of miners' phthisis. The staff of the institute comprises thirty-eight Europeans, one Indian and eighteen natives.

# Medicolegal

### When Death from Typhoid Fever Is an Accident

*(Christ v. Pacific Mut. Life Ins. Co. (Ill.), 144 N. E. R. 161)*

The Supreme Court of Illinois, in affirming a judgment of the appellate court that affirmed a judgment in favor of the plaintiff on an insurance policy, says that the only question presented was whether the evidence tended to prove the allegation that the death of the insured, which was from typhoid fever, was produced solely through external, violent and accidental means. He worked in railroad shops where there were two systems of water pipes, one for conveying water for drinking purposes, and the other for conveying water for other purposes. The two systems of pipes were connected at only one point, where there was a gate valve, which kept the water from either system from flowing into the other. The water for both systems was ordinarily supplied by the city from its regular water mains. But at a time when there was a shortage of water furnished by the city, the railroad company pumped into the system of pipes used to convey water for other than drinking purposes water from a creek into which sewage was emptied. During that time the valve at the connection of the two systems of water pipes became defective and the drinking water became polluted. The insured, uninformed of this condition, several times drank water from a faucet of the system of pipes used to convey water for drinking purposes. As a result, he became ill with typhoid fever, and died from it. The insurance company contended that his death was not caused by "external, violent and accidental means," for which indemnity was provided; but the court holds otherwise. Typhoid fever is a disease, and, as was stipulated, it is idiopathic—a primary disease, not preceded and caused by any other disease. It is due to a specific germ, which is ordinarily taken into the system with food or drink. A death by typhoid fever cannot be regarded as accidental unless it appears that the disease itself was occasioned by accidental means. The means by which this disease is acquired being the entrance of typhoid bacilli into the system, if the means of such entrance are accidental the resulting typhoid fever and its fatal effect may also be said to be accidental. This court has held that, where the death arose from accidentally taking and drinking poison, the injury resulting in death may be regarded as received through violent means: that poison taken into the stomach, producing death, may be treated as an external, violent means. The same principle applies to typhoid bacilli accidentally taken into the stomach. Violence causing a bodily injury is not necessarily limited to physical force, but the accidental introduction into the body of a foreign substance which causes death or extreme bodily injury and suffering is violent within the meaning of the policy, as much as if the violence had been a blow.

### Healer Convicted of Obtaining Money by False Pretenses

*(Palotta v. State (Wis.), 199 N. W. R. 72)*

The Supreme Court of Wisconsin says that defendant Palotta was convicted of having secured $200 by false pretenses and sentenced to one year's imprisonment in the state prison; and that the judgment and sentence are affirmed. In the information it was charged, in substance, that the defendant, on a certain date, did unlawfully, and by falsely pretending that he was a doctor, a chiropractor, and spiritual healer, and could cure insanity and do all sorts of magic tricks, tell the complaining witness and his mother that they were suffering from nervousness and fraudulently represent that he could cure them, whereby he deceived them and induced the witness to give him $200. There was testimony that when the defendant took the complaining witness and his mother into a bedroom he prayed and put a collar having gold tassels on each of them, and spoke magic words over them; that he gave them a couple of nuts to put in their pockets; that he told them to get two silk shirts of the best silk; that he made passes over them and hypnotized them;

that for a short time after the treatment the complaining witness felt better, but later felt much worse than before. One contention on behalf of the defendant was that the representations which were proved were too absurd and incredible to deceive any reasonable person, and that the complaining witness could not have been deceived by them. But when one has succeeded in defrauding another by means of false representations, he should not be allowed to shield himself by the claim that his victim was less clever or more credulous than himself. Hence it is not the prevailing rule or the rule in Wisconsin that, where all the other ingredients of the offense have been committed, the defendant should be acquitted on the ground that the person defrauded failed to exercise ordinary care and prudence. The real question is not whether the representations are such as might deceive persons of ordinary care, but whether they are such as are adapted to deceive and do deceive the persons to whom they are made. It logically follows that it is not a necessary condition to conviction for this offense that there must be proof that the defrauded person has made investigation as to the truth of the representations relied on. Again, it was argued that prosecutions of this character cannot stand on mere promises or expressions of opinion. But when false representations as to past or present facts are proved and relied on they are not made innocuous because they are also mingled with misrepresentations as to future events. This court is convinced that the representations claimed to have been made were of such a character that the trial court properly submitted them and their effect to the jury, and that there was sufficient evidence to sustain the verdict.

### Prescribing of Liquor Under State Enforcement Act

*(Commonwealth v. Galloway (Ky.), 261 S. W. R. 887)*

The Court of Appeals of Kentucky, in affirming a judgment in favor of the defendant, says that he was a practicing physician who held a permit from the federal prohibition commissioner to prescribe intoxicating liquors for medicinal purposes under the regulations of the federal prohibition enforcement act. He was indicted by the grand jury of a county, being charged with unlawfully issuing a prescription for intoxicating liquors when he did not in good faith believe, after a careful physical examination, or on the best information obtainable, that the use of the liquor so prescribed for the person to whom the prescription was issued was necessary and would afford relief to such person from some known ailment. The indictment was practically in the language of the federal enforcement act prohibiting the issual of such prescriptions except under the restrictions and conditions named therein. The Kentucky enforcement act (Acts of 1922, Chapter 33) creates no such offense, nor does it prescribe any restrictions under which such prescriptions may be issued. Nowhere in the Kentucky act is there any prohibition against the issual of such prescriptions by physicians, or fixing any penalty for their issual except under named restrictions.

Section 32 of the Kentucky enforcement act is the only part of it which deals directly with such restrictions. That section is: "Physicians may issue and pharmacists may fill prescriptions for intoxicating liquors, under the restrictions of the national federal law." Clearly this is no requirement that they may not be issued in any other way than under such restrictions, nor is there a penalty prescribed for their issual otherwise than under such restrictions. On the contrary, it is a mere permissive right to issue the same under such federal restrictions, and the failure to make such issual in any other way an offense under the state law, and the failure to prescribe a penalty for such issual, make it apparent that the statute is only permissive in its terms, and that there is no such offense under the statute.

Section 33 imposes the absolute duty on a physician of keeping duplicates of prescriptions on file and that they shall be open to inspection. Section 35 imposes on him the duty of not issuing such prescriptions for more than one pint of such liquors at one time, and prohibits him from issuing such prescription to any one person at intervals of less than ten days. These are absolute duties imposed on the physician, and a failure to comply with any of them may be said to be embraced within the blanket penalty provisions of Section 42. But the language of Section 32 is far short of imposing any duty on the physician not to issue any prescription except under the restrictions of the federal act.

The state act obviously contemplates the issual of prescriptions for liquors by physicians for medicinal purposes, and as the mere permissive right to issue them under the restrictions of the federal act cannot be construed an inhibition against their issual in any other way, it seems clear that there is no such duty imposed by the state act.

### Evidence of Insanity Erroneously Excluded—Evidence of Ignorance and Mental Inferiority Admissible in Mitigation

*(Thomas v. State (Texas), 262 S. W. R. 88)*

The Court of Criminal Appeals of Texas, in reversing a judgment of conviction of defendant Thomas and remanding the cause, says that he was charged with rape on his daughter, a girl under the age of consent; was convicted of rape; and his punishment was fixed at ninety-nine years in the penitentiary. But there was error in a refusal of the trial judge to charge the jury on insanity, the testimony in the case being such as to raise the issue of insanity. The defendant's mother testified that he had had epileptic fits since he was a small child; that she had seen him have fits that lasted a day and a night; that she had a daughter who had epileptic fits and died; that the defendant's father had epileptic fits, and that his grandfather was insane several years before he died. A brother testified that for a good many years the defendant had had epileptic fits, would be unconscious, would fall as if he were dead; that the period of time during which he had had such fits was about twenty-five years; that the sister to whom his mother referred as having had epileptic fits was an idiot. A physician testified for the defense that from his experience as a practicing physician it was his opinion that a man having had epileptic fits for over a period of thirty years, remaining unconscious sometimes for a day, and some of his ancestors having died with epileptic fits, would not care as to whether he was right or wrong in committing a moral misdeed. The fact that there was controverting evidence offered on the part of the state would not deprive the defendant of the right to have the law of this defensive issue submitted to the jury. Then, proof was offered of the fact that the defendant had never attended school, it being stated that it was the purpose to follow this up with further proof that he had not been sent to school because he did not possess mentality enough to learn. Evidence of lack of education and of a low order of mentality seems admissible in mitigation and as affecting the penalty; and when the defense is based on insanity, this court thinks such testimony should be admitted.

## Society Proceedings

### COMING MEETINGS

American Pathological Society, Washington, D. C., Dec. 29-31. Dr. E. B. Krumbhaar, Chestnut Hill, Philadelphia, Secretary.

American Pharmacological Society, Washington, D. C., Dec. 29-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Secretary.

American Physiological Society, Washington, D. C., Dec. 30-Jan. 1. Dr. Charles W. Greene, University of Missouri, Columbia, Mo., Secretary.

American Society of Biological Chemistry, Washington, D. C., Dec. 29-31. Dr. Victor C. Myers, New York Post-Graduate Medical School, New York, Secretary.

District of Columbia, Medical Society of, Washington, Dec. 3. Dr. C. B. Conklin, Medical Science Building, Washington, Secretary.

Federation of American Societies for Experimental Biology, Washington, D. C., Dec. 29-31. Dr. E. B. Krumbhaar, Chestnut Hill, Philadelphia, Secretary.

Philippine Islands Medical Association, Manila, Dec. 18-20. Dr. I. Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 13-14. Dr. Ramon M. Suarez, Santurce, Secretary.

Radiological Society of North America, Kansas City, Mo., Dec. 8-12. Dr. H. J. Sandborn, 844 College Ave., Appleton, Wis., Secretary.

Society of American Bacteriologists, Washington, D. C., Dec. 29-31. Dr. J. M. Sherman, Dairy Industry Building, Ithaca, N. Y., Secretary.

Southern Surgical Association, Charleston, S. C., Dec. 9-11. Dr. H. A. Royster, 425 Fayetteville Street, Raleigh, N. C., Secretary.

Western Surgical Association, French Lick Springs, Dec. 4-6. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia

168: 469-634 (Oct.) 1924

*Infection of Gallbladder in Relation to Pernicious Anemia. N. W. Jones and T. M. Joyce, Portland, Ore.—p. 469.
Diabetes Surgery. M. G. Seelig, St. Louis.—p. 495.
*Clinical Utilization of Leukocyte Counts. R. A. Kilduffe, Los Angeles. —p. 502.
*Composition and Physical Properties of Normal Human Blood. H. C. Gram, Philadelphia.—p. 511.
Low Back Pain. J. A. Key, St. Louis.—p. 526.
*Therapeutic Value of Blood Transfusion. R. E. Stetson, New York.—p. 534.
*Behavior of Tuberculous Guinea-Pigs Under Parathyroid and Calcium Administration. P. S. Peloure and R. C. Rosenberger, Philadelphia.—p. 546.
*Selective Action of Suprarenal Cortex Secretion on Mesothelial Tissues. R. C. Moehlig, Detroit.—p. 553.
*Epidemic Diaphragmatic Pleurodynia or "Devil's Grip." R. G. Torrey, Philadelphia.—p. 564.
*Protozoan Organism Within Erythrocytes of Patients Suffering from Epidemic Pleurodynia ("Devil's Grip"). J. C. Small, Philadelphia.—p. 571.
Surgery of Pulmonary Tuberculosis. J. Alexander, Ann Arbor, Mich.—p. 574.

**Gallbladder Infection and Pernicious Anemia.**—Evidence is presented by Jones and Joyce pointing to the presence of hemolyzing and other micro-organisms in the wall of the gallbladder as being the possible cause of idiopathic progressive pernicious anemia. In a series of thirteen cases the presence of chronic gallbladder disease was found by special study in each case. Cholecystectomy on five patients of this series seemingly has removed some or all of the symptoms of the disease.

**Clinical Value of Leukocyte Counts.**—Kilduffe points out that while the counting of blood cells and especially white blood cells is a most frequently utilized laboratory procedure, the correlation of the results with the clinical data is not attained to the fullest extent by reports which give simply the tabulated numerical findings. To obtain the greatest value from leukocyte counts, especially as a means of recording progress, it should be emphasized again that they should be made in series.

**Properties of Normal Human Blood.**—Forty-four tables are presented by Gram, giving the normal figures for various chemical, physical and morphologic examinations of the blood.

**Value of Blood Transfusion.**—Stetson has treated by blood transfusion about 100 cases of undoubted sepsis. Thirty-nine of sixty-eight cases reviewed showed positive blood cultures. *Streptococcus hemolyticus* occurred in nineteen instances, with ten recoveries and nine deaths. Of the nine patients that died, pneumonia killed four and meningitis two. *Streptococcus viridans* was found in eight cases, six of them being malignant endocarditis and fatal in termination. The seventh case occurred after tonsillectomy in a baby who recovered after two transfusions. The eighth patient had a postpartum sepsis, and died. *Staphylococcus aureus* occurred in 12 patients, 9 of whom died. Of the 9 deaths, however, 3 patients were moribund at the time of the first transfusion, and 1 had an acute endocarditis, so that in at least 4 cases there never was a chance, and a fairer ratio would be 3 recoveries to 5 deaths. The total figures in this group show 14 recoveries to 24 deaths. Stetson is convinced that many patients could be saved if transfusion were started early and given every forty-eight hours until the blood cultures became sterile and the clinical improvement sufficiently marked to make it safe to stop. In most instances it is best to give only from 500 to 600 c.c. of blood—less in children. The most dreaded complications are pneumonia and meningitis. Escaping these, blood transfusion offers any patient with septicemia at least a 50 per cent. chance for recovery.

**Effect of Parathyroid and Calcium on Tuberculous Guinea-Pigs.**—The theory on which the experiments done by Peloure and Rosenberger were based is that in the tuberculous and those predisposed to tuberculosis there is a hypoparathyroidism which curtails the final stages of calcium metabolism as the result of which the calcium does not enter properly into true intracellular chemistry. Tuberculous and nontuberculous guinea-pigs were given calcium and parathyroid substance separately and combined. The results so far were as follows: The lesions were greater in the tuberculous control and less marked in the calcium-fed animals. In those given parathyroid and in those getting both substances the lesions were still less marked. The weight gains bore an inverse relation to the size of the lesions, as would be expected, and were much greater in those on the combined medication. The tuberculous animals receiving both drugs ate far more than either of the others and even more than normal guinea-pigs under like conditions. It would seem that if one wished to make a guinea-pig gain enormously while taking calcium and parathyroid he should inoculate him with tuberculosis. The results in all of these experiments make it highly suggestive that similar results might be obtained in certain classes of patients with tuberculosis.

**Action of Suprarenal Cortex Secretion.**—A review made by Moehlig of clinical and embryologic evidence supports the conclusion that the suprarenal cortex secretion has a selective action on the mesothelial tissues; that the normal development and continuous normal functioning of the sexual glands and skeletal muscular system is dependent on the normal functioning of the suprarenal cortex and that the anterior cerebral defects include the pituitary gland, which in turn are accompanied by suprarenal cortex defects.

**Epidemic Diaphragmatic Pleurodynia.**—Torrey reports four cases of a disease with a definite symptomatology which was reported as epidemic in Virginia, New York and along the New Jersey coast last summer, and has been prevalent in Pennsylvania this summer. Areas of infection have spread. This disease is not as generally recognized as it should be. The infecting agent has not heretofore been recognized. The disease seems to occur only during the summer months but as yet no insect has been demonstrated to be a carrier. The mode of transmission of infection has not been found.

**Protozoan Organism Found in Epidemic Pleurodynia.**—In one of the cases reported in the preceding paper by Torrey, Small found a parasite with a striking resemblance to the developmental cycle protozoan, but differs from the malaria group in staining characters, in its morphology and in its lack of a destructive action on the contiguous portion of the erythrocyte enclosing it, since where only narrow peripheral zones of the erythrocyte remain, they may yet appear normal in their staining reactions. Pigment granules have not been observed. In view of these findings the organism is believed to be a heretofore undescribed plasmodium and it is suggested that it be designated *Plasmodium pleurodynie*.

### Atlantic Medical Journal, Harrisburg, Pa.

28: 1-56 (Oct.) 1924

Our Duties Under the Constitution and By-Laws. J. N. Henry, Philadelphia.—p. 1.
*Pulmonary Suppurations. W. F. Moore and R. M. Lukens, Philadelphia.—p. 8.
Vestibular Apparatus in Miners' Nystagmus. W. Marshall, Pittsburgh. —p. 11.
*Danger of Strangulation in Femoral Hernia. T. T. Thomas, Philadelphia.—p. 15.
*Hematuria and Guessing. P. S. Pelouze, Philadelphia.—p. 19.
Distortion of Pelvis. W. J. Merrill, Philadelphia.—p. 21.
Deafness and Its Prevention. W. D. Chase, Bethlehem.—p. 23.
Medical Practice. H. Stewart, Gettysburg.—p. 26.
Clinical Typhoid Fever. T. S. Blair, Santa Ana, Calif.—p. 28.
*Subdiaphragmatic Abscess. A. T. Kibaey, McKees Rocks, Pa.—p. 30.

**Bronchoscopic Treatment of Lung Suppurations.**—Moore and Lukens advocate bronchoscopic treatment of cases of suppurative conditions of the lungs, except in cases of recent profuse hemorrhage; in a moribund patient; in very extensive disease of the lung, involving one-half or more of the lung tissue; in organic diseases of the heart and great vessels and in laryngeal tuberculosis.

**Danger of Strangulation in Femoral Hernia.**—Thomas advises that more attention should be given in cases of strangulated femoral hernia operated on early to the possible presence of one or more lines of necrosis or threatened necrosis in the intestinal wall, due to the pressure of the sharp edge of Gimbernat's ligament. The invagination of such areas by Lembert suture will often give an adequate protection against later perforation in these necrotic areas.

**Hematuria.**—Pelouze urges that in every case of hematuria the source of the hemorrhage be determined and that cystoscopy is a great aid to that end. To allow these cases to go unstudied until the bleeding has ceased often delays the correct diagnosis for an indefinite period. The time properly to study a patient with hematuria is while that patient is bleeding. There are certain definite contraindications to a cystoscopic study but that if none of these exist such a study should not be delayed.

**Subdiaphragmatic Abscess.**—Kibzey reports a case of subphrenic abscess occurring in a boy, aged 4 years. No cause was established. The diagnosis was based on objective symptoms. The patient had fever, chills and sweats, but no cough. However, when the abscess cavity was irrigated, he coughed.

## Boston Medical and Surgical Journal

**191**: 659-708 (Oct. 9) 1924

Tumor of Carotid Gland. R. H. Miller and F. E. Garland.—p. 659.
Endothermy, Applied to Accessible Epidermoid Carcinoma. G. A. Wyeth.—p. 662.
*Paroxysmal Tachycardia with Reference to Prognosis. F. A. Willius and A. R. Barnes.—p. 666.
Medicosocial Aspects of Heart Disease. B. L. Russell.—p. 670.
Anilin Poisoning in Rubber Industry. H. J. Cronin.—p. 683.

**Prognosis in Paroxysmal Tachycardia.**—Of a group of 102 patients with paroxysmal tachycardia, Willius and Barnes traced eighty-four. Fifty-nine per cent. were males, and 41 per cent. females. The greatest number were in the sixth decade in each sex. The occurrence of vertigo as a symptom of paroxysmal tachycardia seemed to be determined largely by the coexistence of arteriosclerotic processes by which the blood supply to the brain was probably diminished. Pain was confined practically to those cases in which there were coexisting arteriosclerotic processes affecting the aorta and coronary arteries. Vertigo, syncope, and "spells of unconsciousness" should always lead to the exclusion of attacks of paroxysmal tachycardia as a cause. Thirty-six of fifty-eight patients, traced by questionnaire, report that they are still having attacks of paroxysmal tachycardia. Only one patient was bed-fast at the time the questionnaires were returned. Twenty-five of the eighty-four patients traced had died. Only twenty of these deaths could be attributed to cardiac disease, making a total death rate of 24 per cent. The total death rate among males (26 per cent.) is slightly above that for females (21 per cent.). Of forty-eight patients with minimal or no cardiac findings at examination, five (10 per cent.) died from cardiac disease. Of thirty-six patients with definite findings of cardiac disease, fifteen (42 per cent.) died. The death rates were high in cases of paroxysmal tachycardia associated with aortic and coronary disease (57 per cent.), and with endocarditis (46 per cent.). The estimation of the prognosis of paroxysmal tachycardia, so far as this study is concerned, consisted very largely of the estimation of the type and degree of the underlying cardiac damage.

**191**: 709-756 (Oct. 16) 1924

Surgical Treatment of Gallbladder Disease in Diabetes. D. F. Jones, L. S. McKittrick and D. L. Sisco, Boston.—p. 709.
*Ankylosis: Treatment by Arthroplasty. W. R. MacCausland, Boston.—p. 716.
Intestinal Obstruction by Meckel's Diverticulum. E. L. Hunt, Worcester, Mass.—p. 722.
Intravenous Use of Mercurochrome. F. S. Hopkins, Springfield, Mass.—p. 732.
Relation of Surgeon in Industry to Family Physician. H. G. Giddings, Boston.—p. 736.
Zinc Stearate Insufflation in Infancy. E. S. O'Keefe, Boston.—p. 739.

**Treatment of Ankylosis by Arthroplasty.**—MacCausland states that if the technic of arthroplasty is carried out with extreme care, the expectation of joint motion is extremely good. The new joint should have smooth motion 75 to 90 per cent. normal, and the restricting capsule should be strong without tenderness and without the tendency to strain easily. The tendency for exostoses to form around a joint should be reduced to a minimum, and the joint should retain and even increase its motion on use. Secondary operations for the removal of limiting spurs at all joints, and for the removal of the head of the radius in the case of the elbow joint, gave the author an opportunity to examine the completed joint. The bone ends were smooth, fit snugly, and were covered with firm fibrous tissue and moved with a minimum of resistance. The joint space was a sac, sometimes multilocular, containing apparently normal joint fluid. In one case, for instance, both elbows were mobilized, and the result was so satisfactory that the man was able to return to his work as a wood chopper.

## Colorado Medicine, Denver

**21**: 283-320 (Oct.) 1924

University of Colorado School of Medicine and Hospital. C. N. Meader, Denver.—p. 287.
Functioning of New Medical Group. C. N. Meader, Denver.—p. 303.
State Care of Blind. D. A. Striekler, Denver.—p. 307.
*Case of Fatal Mercurial Poisoning from Calomel. N. M. Burnett and J. Pestal, Lamar, Colo.—p. 313.

**Fatal Poisoning from Calomel.**—Burnett and Pestal record the case of a woman who having been somewhat constipated, took eight one-half grain tablets of calomel in two doses. She slept well that night and on arising took one heaping tablespoonful of salts. Immediately thereafter she became nauseated and took about a half cupful of coffee, which did not stop the nausea, and in about a half hour she had a copious bowel movement and then began vomiting. The next morning blood appeared in the stools and vomitus persisted. Swelling of the gums and suppression of urine appeared, lasting four days. Epistaxis appeared; also uterine hemorrhage which lasted two days. She was given two doses of hemoplastin which effectively checked her hemorrhages, but following the second dose she developed a severe urticarial rash. Her vomiting, however, did not cease. She was given potassium acetate solution per rectum by the drop method, which she retained fairly well, and her kidneys became active so that she passed about 30 ounces of urine in twenty-four hours. In spite of this she declined and died nineteen days after taking the calomel.

## Journal of Experimental Medicine, Baltimore

**40**: 405-574 (Oct.) 1924

Oxidation and Reduction by Pneumococcus. VI. Oxidation of Enzymes in Sterile Extracts of Pneumococcus. J. M. Neill and O. T. Avery, New York.—p. 405.
Id. VII. Enzyme Activity of Sterile Filtrates of Aerobic and Anaerobic Cultures of Pneumococcus. J. M. Neill and O. T. Avery, New York.—p. 423.
*Influence of Thyroidectomy, Gonadectomy, Suprarenalectomy and Splenectomy on Thymus Gland of Rabbits. D. Marine, O. T. Manley and E. J. Baumann, New York.—p. 429.
Hemolytic Streptococci by Precipitin Reaction. C. H. Hitchcock, St. Louis.—p. 445.
Agglutination. II. The Relationship of Reduction of Electrical Charge to Specific Bacterial Agglutination. G. S. Shibley, New York.—p. 453.
Pneumococcus Growth Inhibition. III. Influence of Specific Antipneumococcus Serum on Growth-Inhibitory and Bactericidal Action of Normal Serum-Leukocyte Mixtures. O. H. Robertson and R. H. P. Peking, China.—p. 467.
Id. IV. Simplified Agitator for Growth Inhibition Tests with Serum-Leukocyte Mixtures; Modifications in Technic of Test. O. H. Robertson, S. T. Woo and S. N. Cheer, Peking, China.—p. 487.
*Biology of Streptococcus. IV. Streptococcus Scarlatinal in Convalescence and in Complications of Scarlet Fever. F. A. Stevens and A. R. Dochez, New York.—p. 493.
*Allergic Irritability. Formation of Antisheep Hemolytic Amboceptor in Normal and Tuberculous Guinea-Pig. P. A. Lewis and D. Loomis, Princeton, N. J.—p. 503.
Production of Persistent Alopecia in Rabbits by Roentgen-Ray Irradiation. H. Clark and E. Sturm.—p. 517.
*Attempts to Transmit Rheumatic Fever to Rabbits and Guinea-Pigs. C. P. Miller, New York.—p. 525.
*Spontaneous Interstitial Myocarditis in Rabbits. C. P. Miller, New York.—p. 543.
*Blood Platelets in Pneumococcus Infections. H. A. Reimann, New York.—p. 553.
*Immunity in Mice by Inhalation of Pneumococci. E. G. Stillman, New York.—p. 567.

**Effect of Removal of Other Glands on Thymus.**—Marine, Manley and Baumann catalog the results of their work as follows: Thyroidectomy hastens, while gonadectomy delays, but does not permanently prevent, involution of the thymus. Suprarenalectomy alone not only delays involution of the thymus and lymphoid tissue but may cause their regeneration. Thyroidectomy prevents this reaction even after combined suprarenalectomy and gonadectomy. Suprarenalectomy plus gonadectomy is a more powerful stimulus for thymus and lymphoid regeneration than either of these influences alone. The combined effect of these two factors results in certain lymphoid and thymus hyperplasia in rabbits which persists until regeneration of accessory interrenal tissue corrects the physiological defect. The syndrome thus experimentally produced resembles status lymphaticus and is believed to depend mainly on a partial loss of certain functions of the interrenal and sex glands rather than of the chromaffin tissue. The normal and abnormal lymphoid and thymic hyperplasias of infancy and childhood are believed to be manifestations of a functional underdevelopment of the interrenal and sex glands of varying intensity. The so-called lymphatic constitution which underlies or accompanies exophthalmic goiter, Addison's disease, and acromegaly also appears to be dependent on a partial suppression of certain functions of the interrenal and sex glands.

**Scarlet Fever Streptococcus in Convalescence.**—A group of streptococci which agglutinate with scarlatinal immune serums has been isolated by Stevins and Dochez from the throats of 65 per cent. of cases of scarlet fever during the first week of the disease. Strains of hemolytic streptococci belonging to this group have been isolated from the throats of patients at the termination of quarantine (thirty days). Hemolytic streptococci are found most frequently in the throat in convalescent patients in whom the tonsillar inflammation has not entirely subsided. It is suggested that the complications occurring in scarlet fever may be the result of a secondary infection with pyogenic strains of streptococci.

**Allergic Irritability.**—The guinea-pig infected with virulent tubercle bacilli develops much more antisheep amboceptor than do controls when given like amounts of sheep red blood corpuscles. The curve of antibody production in the guinea-pig when treated with sheep red blood corpuscles shows a departure from curves previously determined in other animals. These facts were ascertained by Lewis and Loomis as part of an effort to learn more of the functional nature of the inheritable factors controlling natural resistance to disease. The nature of some of the problems involved is outlined, and the limited bearing of the experiments on these is discussed.

**Experimental Transmission of Rheumatic Fever.**—In a series of attempts to transmit a virus from patients in the acute stages of rheumatic fever, twenty-seven rabbits and fourteen guinea-pigs were inoculated by Miller with one of the following materials: whole blood, serum, joint fluid, pleural fluid, throat washings, suspensions of tonsil tissue. Subsequent transfer inoculations from animal to animal brought the total number of animals employed in the experiments to sixty-seven rabbits and forty guinea-pigs. Only two animals developed an acute nonbacterial arthritis. No other evidence of successful transmission of the disease was obtained. In about one half of the rabbits and two thirds of the guinea-pigs myocardial lesions were encountered which consisted of interstitial accumulations of lymphocytes and endothelial cells. Similar lesions were found in control animals.

**Spontaneous Interstitial Myocarditis in Rabbits.**—The hearts of thirty-four apparently healthy adult rabbits were carefully studied microscopically by Miller. Twenty, or 60 per cent., contained lesions consisting of lymphocytes and endothelial leukocytes in varying proportions to which were sometimes added polymorphonuclear eosinophils, plasma cells, and fibroblasts in small numbers. The lesions occurred most frequently between the muscle fibers of the papillary muscles and ventricular walls, and occasionally beneath the endocardium and epicardium. No micro-organisms or cell inclusion bodies were found in the lesions.

**Blood Platelets in Pneumococcus Infections.**—A study was made by Reimann of the behavior of the blood platelets during the course of pneumonia in man, as also in several rabbits experimentally infected with pneumococci. The number of platelets begins to diminish after the infection has become established. A thrombopenia occurs during the febrile period. Immediately following the onset of the crisis in lobar pneumonia or after the temperature begins to fall by lysis, the platelets begin gradually to increase in number. In the post-febrile period, the platelet count increases until the normal number is greatly exceeded, and there is a return to the normal number only after about two weeks. Sequelae, characterized by fever, following pneumonia, are accompanied by a renewed diminution in the number of platelets. After subsidence of the temperature their number usually increases until the normal is again exceeded. The platelets in general are smaller and contain more granules during the thrombopenic stage of pneumonia. Intravenous injection of anti-pneumococcus serum during pneumonia ordinarily produces no variation in the number of platelets.

**Effect of Inhalation of Pneumococci.**—Stillman asserts that a definite degree of active immunity can be induced in mice through the repeated inhalation of live pneumococci. Only slight immunity is induced in mice by the repeated inhalation of killed organisms.

## Kentucky Medical Journal, Bowling Green

**22:** 363-416 (Oct.) 1924

"Doctor".—Past, Present and Future. E. R. Palmer, Louisville.—p. 367.
Electro-Coagulation Versus Operation in Cancer of Uterus. A. D. Willmoth, Louisville.—p. 371.
Medical Fads and Frauds. A. H. Barkley, Lexington.—p. 376.
Deaths from Third Inoculation with Typhoid Para-Typhoid Vaccine. J. L. Russell, Adairville.—p. 378.
Pellagra. V. E. and R. C. Moss, Rockfield.—p. 383.
Chronic Duodenal Ulcer. S. S. McReynolds, Russellville.—p. 385.
Gynecologic Surgery. J. R. Wathen, Louisville.—p. 388.
Congenital Internal Hydrocephalus. T. F. Hale, Louisville.—p. 390.
Diabetes Mellitus. J. W. Moore, Louisville.—p. 394.
Masturbation in Girl of Eight. J. W. Bruce, Louisville.—p. 397.
Bilateral Renal Tuberculosis. W. T. Briggs, Lexington.—p. 398.
Tubercular Syphilide. J. E. Hays, Louisville.—p. 400.
Surgery of Bile Tract: Drainage and Removal. A. H. Barkley, Lexington.—p. 404.
Christmas Seal. E. Cole, New York.—p. 407.
Eruption in Child of Seven Months: Erythema Multiforme Bullosum. C. B. Wilmott, Louisville.—p. 408.
Ovarian Carcinoma and Uterine Fibroma: Suppurating Ovarian Cystoma: Uterine and Ovarian Fibroma. M. Casper, Louisville.—p. 409.
*Relation of Infected Tonsils to Chorea. O. Dulaney, Louisville.—p. 411.
*Appendicitis with Fistulous Formation. L. W. Frank, Louisville.—p. 415.

**Infected Tonsils and Chorea.**—Each one of the twenty-three cases of chorea and choreiform affections seen by Dulaney appeared to be secondary to primary foci of infection in the tonsils. The organisms harbored by the tonsils were of the types commonly found in tonsillar infection, but the streptococcus and pneumococcus were apparently the most constantly appearing organisms. The removal of the tonsils together with any other infected areas in the nose or throat, gave complete and immediate relief which has lasted in all the cases until the present time. Some of these patients have been observed for three years after the disappearance of the nervous symptoms.

**Appendicitis with Fistula.**—In the case cited by Frank the appendix was found incorporated in a mass of inflammatory adhesions which also involved the ileum and cecum. Some difficulty was encountered in freeing the appendix, but when this was accomplished a definite fistulous opening with mucous membrane everted was found. The man had had repeated attacks of pain probably due to the fact that following formation of the abscess leakage occurred into the "walled off" area from the appendix, causing increase in local peritonitis. When leakage ceased pain would subside until the appendix refilled with pus.

## Michigan State Medical Society Journal, Grand Rapids

**23:** 397-452 (Oct.) 1924

Twenty-Fifth Anniversary of Michigan State Board of Registration in Medicine. G. L. Connor, Detroit.—p. 397.
Hospital and Intern. G. L. Le Fevre, Muskegon.—p. 399.
Points of Interest Relative to Education and Lives of Hard of Hearing. W. G. Bird, Flint.—p. 401.

*Enlargement of Thymus. F. F. Hardy, Grand Rapids.—p. 403.
Lethargic Encephalitis. C. W. Heald, Battle Creek.—p. 407.
Problem of Physician's Relation to Public. W. D. Haggard, Nashville, Tenn.—p. 410.

**Radium Therapy for Enlarged Thymus.**—Hardy reports eighteen cases of enlarged thymus in which radium therapy was given. In six cases untoward symptoms arose after the use of radium. In one case bronchopneumonia, in an unusually severe toxic form, developed on the second day following the use of radium, and resulted fatally. In another case a week of severe convulsions occurred. Other complications were subnormal temperature and cyanosis; very severe convulsions associated, with periods of cyanosis; increase in the cough, periods of cyanosis and suspended respiration occurred during the week following the use of radium. In three cases complete blood counts and nonprotein blood nitrogen determinations were made before and after the use of radium. Immediately after the use of radium a moderate leukocytosis occurred with a small increase in the polymorphonuclears, and an increase in the nonprotein blood nitrogen of about 50 per cent. In these infants the normal nonprotein blood nitrogen varied. The dose of radium used was that generally employed, 800 mg. hours. In addition to the usual silver filtration, 2 mm. of lead was added to filter out the rays which were likely to produce hyperemia or burns.

## Minnesota Medicine, St. Paul

7: 629-698 (Oct.) 1924

Nasal Deformities. G. B. New, Rochester.—p. 629.
Conduction Mechanism of Heart. O. S. Hansen, Minneapolis.—p. 633.
Classification (Lewis) of Irregularities of Heart. H. Oerting, St. Paul.—p. 636.
Cardiac Irregularities. H. E. Richardson, St. Paul.—p. 638.
Irregular Action of Heart. C. N. Hensel, St. Paul.—p. 642.
Cardiac Arrhythmias. E. T. F. Richards, St. Paul.—p. 647.
*Late Congenital Syphilis. P. A. O'Leary, Rochester.—p. 651.
*Intraperitoneal Transfusion with Citrated Blood. D. M. Spierstein, Minneapolis.—p. 657.
Nontuberculous Pulmonary Suppuration. C. A. Hedblom, Rochester.—p. 668.
Study of 433 Hand Injuries. H. E. Hullsieh, St. Paul.—p. 670.
*Obstetrics. W. H. Condit, Minneapolis.—p. 676.

**Late Congenital Syphilis.**—The classical stigmas of congenital syphilis are described by O'Leary, and statistics are given as to the frequency with which certain of the stigmas are found. The serologic findings in a given group are emphasized in order to impress the fact that if only the Wassermann test of the blood is depended on for diagnosis only 70 per cent. of the cases of late congenital syphilis will be diagnosed correctly. Neurosyphilis was revealed in only 14 per cent. of the children examined serologically, in contrast to 32.7 and 28.8 per cent., respectively, as reported in the literature. Attention is called to the need of corroborative aids, such as examinations of the eye and ear, roentgen-ray examinations, and serologic tests in certain of these patients.

**Intraperitoneal Transfusion with Citrated Blood.**—Spierstein discusses the general theoretical and practical considerations concerning the intraperitoneal transfusion of citrated blood. Based on a considerable amount of laboratory and clinical data obtained from all available sources, he points out the practicability of this method of giving blood during infancy and childhood. The necessity for such a method of approach, its simplicity of technic, its apparent harmlessness, and the beneficial results are discussed. Clinical results are especially striking in cases of anemia, that is, in cases requiring blood transfusions, not primarily as stimulative agents, but as restorers of blood loss. Its value in severe nutritional disturbances (athrepsia) is questionable. Reactions following intraperitoneal transfusions are comparable to those following intravenous transfusions, but are apparently not as severe. In more than fifty clinical applications Spierstein has seen no harmful effect following the use of this procedure.

**Effect of Motoring on Labor.**—It has been Condit's experience with pregnant patients who drive motor cars and insist on doing so up to or near maturity, to have premature or false labor, requiring absolute rest in bed for from seven to ten days, in order that the uterine muscle may recover so that the contractions would have some muscular strength and efficiency. He believes that transportation in an automobile very materially increases intra-uterine complications of pregnancy and intra-uterine death of the fetus.

## Nebraska State Medical Journal, Norfolk

9: 377-416 (Oct.) 1924

Diagnosis of Chronic Gallbladder Disease. J. E. Meyer, Columbus.—p. 377.
Contributions of Slit Lamp to Knowledge of Anatomy. R. Von der Heydt, Chicago.—p. 384.
Constipation in Children. E. R. Hays, Falls City.—p. 386.
*Outbreak of Botulism in Western Nebraska. A. L. Cooper, Scottsbluff.—p. 391.
Roentgen-Ray Treatment of Uterine Fibroids. R. W. Fouts, Omaha.—p. 395.
Dementia Praecox. M. L. Grete, Lincoln.—p. 397.
Cooperative Medicine from Standpoint of Patient. H. M. Hepperlen, Beatrice.—p. 399.
Experimental Nephritis Induced by Streptococci. G. W. Covey, Lincoln.—p. 402.
Heredity. O. M. Moore, York.—p. 403.
Diagnostic Value of Pain Produced by Lesions of Intracranial Structures. J. J. Keegan, Omaha.—p. 407.
*Sporotrichosis. J. F. Gardiner, Stuart.—p. 408.

**Botulism in Nebraska.**—Cooper reports three cases of botulism occurring in one family as the result of eating bean salad made from home packed green beans mixed in some sliced onions, and mayonnaise dressing. The can had not been heated before it was opened.

**Sporotrichosis.**—Gardiner's case emphasizes the point that lesions of a nodular character occurring on the body, which do not tend to heal under ordinary surgical methods, should be investigated for the presence of fungi. His patient, when first seen, had had these boils for about six months.

## Ohio State Medical Journal, Columbus

20: 609-672 (Oct.) 1924

Surgical Problems of Biliary Passages. W. D. Haggard, Nashville.—p. 613.
Phenoltetrachlorphthalein Liver Function Test. A. S. Robinson, Akron.—p. 617.
Cervix in Difficult Labors. W. Gillespie, Cincinnati.—p. 621.
*Chronic Infection of Bronchocephalic Mucosa in Relation to Public Health. I. G. Clark, Columbus.—p. 626.
Effect of Altitude on Eyes of Aviators and Observers. W. W. Sauer, Marietta.—p. 629.
*Osteomyelitis. R. S. Reich, Cleveland.—p. 633.

**Significance of Paranasal Sinus Infection.**—Clark fears that the full significance of infection of the paranasal sinuses is still underestimated. One reason for this lack of appreciation is the inaccessibility of these spaces. Their involvement also is by no means uniformly accompanied by symptoms that attract the attention of the patient or the physician. Progress in controlling infection of the respiratory passages, both as to prevalence and morbidity has been a disappointment in the past ten years. Whereas several classes of diseases have diminished in varying important degrees, this group of respiratory infection has actually increased. The relation between sinus infection to pulmonic and general infection is grounded in important research findings. The prevention of disease in the family group where sinusitis is prominent should enlist the active interest of the public health student. Particularly is this true of scarlet fever. The classification of what constitutes a pathologic state of sinus infection from the subjective standpoint should be carefully studied and the results made common knowledge.

**Osteomyelitis.**—Reich emphasizes the importance of an early diagnosis of acute osteomyelitis with immediate trephining near the epiphysis. In chronic osteomyelitis sequestrectomy should be attempted only when the radiogram shows complete arrest of the process by formation of involucrum around the process with sharp outline of sequestra. The Carrel-Dakin technic gives the best results in after-treatment of both acute and chronic stages. Pyarthrosis is an extension of the infection by way of the epiphyseal line and joint capsule, and aspiration, lavage and early motion should supersede the previous form of treatment.

## Radiology, St. Paul

3: 273-364 (Oct.) 1924

Roentgen-Ray Technic. W. L. Clark, J. D. Morgan and E. J. Asnis, Philadelphia.—p. 273.
Osteochondromatosis in Hip-Joint. C. G. Sutherland, Rochester, Minn.—p. 285.

Cancer Therapy. R. H. Stevens, Detroit.—p. 286.
Physical Measurements and Comparative Technic in Relation to Biologic Dosage. H. N. Beets and R. A. Arens, Chicago.—p. 293.
Malignant Degeneration in Radiodermatitis, Successfully Treated by Electrocoagulation and Skin Grafting. G. E. Pfahler and C. F. Nassau, Philadelphia.—p. 297.
Intrathoracic Changes Following Roentgen-Ray Treatment. K. S. Davis, Rochester, Minn.—p. 301.
Preoperative and Postoperative Interpretation of Roentgen-Ray Films About Head and Neck. J. C. Beck and P. L. Lederer, Chicago.—p. 323.
Average Wave Lengths of Roentgen Rays. A. Muttscheller, New York.—p. 328.
Unfiltered and Filtered Roentgen-Ray Dosage. A. Bachem, Chicago.—p. 335.
Dental Radiograms. H. W. MacMillan, Cincinnati.—p. 340.
Malpractice Decision. I. S. Trostler, Chicago.—p. 345.

## Southern Medical Journal, Birmingham, Ala.

17: 743-822 (Oct.) 1924

*Endocrine Therapy in Infancy and Childhood. J. Howland, Baltimore.—p. 743.
*Eczema As An Allergic Phenomenon. W. T. Vaughan, Richmond, Va.—p. 749.
Endocarditis As Factor in Acute Infections. C. A. Ray, Charleston, W. Va.—p. 754.
Situation Psychoses. T. A. Williams, Washington, D. C.—p. 757.
Antisocial Behavior from Viewpoint of Neuropsychiatrist. L. E. Bisch, Asheville, N. C.—p. 760.
Mental Hygiene in St. Louis. M. A. Bliss, St. Louis, Mo.—p. 764.
Treatment of Syphilis in Dispensary Practice. E. D. Crutebfield, Galveston, Texas.—p. 767.
*Present Status of Public Health Work. O. Dowling, New Orleans.—p. 773.
*Experimental Study of Ureteral Transplantation into Lower Bowel. A. L. Folsom and G. T. Caldwell, Dallas, Texas.—p. 777.
*Experimental Nephrotomies. W. J. Carson and A. E. Goldstein, Baltimore.—p. 786.
Treatment of Fractures. G. C. Cooke, Winston-Salem, N. C.—p. 794.
Pes Cavus, Due to Paralysis of Extensor Muscles, Dorsal Flexors of Feet. T. M. Foley, Washington, D. C.—p. 798.
State's Duty to Crippled Child. J. K. Simpson, Jacksonville, Fla.—p. 800.
Gastro-Enterostomy Preliminary to Partial Gastrectomy. J. Crisler, Jackson, Miss.—p. 803.
Production or Exaggeration of Symptoms and Methods of Differentiating Those Based on Changes of Organic Nature from Those That Have Psychologic Foundation. I. J. Spear, Baltimore.—p. 804.
Sinus Development and Roentgen-Ray Findings. J. J. Shea, Memphis, Tenn.—p. 810.
Explanation of Iris Coloboma. J. P. Townsend, Charleston, S. C.—p. 813.

**Endocrine Therapy for Children.**—Howland says: The conclusion is forced on us, and it is a conclusion to which physiologists and pharmacologists will subscribe, namely, that if we use single extracts in pediatrics we are confined to the treatment of two conditions, thyroid deficiency and diabetes. Uniglandular therapy then is, in general, unsatisfactory. Polyglandular therapy has come into being on the supposition that not infrequently there is a disordered activity of several glands, a failure of coordination among them. For the belief that numerous glands may be affected in such ways as to produce various clinical syndromes there is no pathologic proof available. Similarly, there is no chemical or physiologic proof of the existence of such conditions. The fact that gradual improvement follows the administration of a heterogeneous mixture of gland extracts is not sufficient evidence to prove that a gland or group of glands is the cause of a clinical picture. One must demand a striking and almost immediate change. One must also demand pathologic or physiologic or chemical evidence. The clinician of the present day is in danger of losing his clinical sense and his critical judgment. He leans too much on laboratory methods for his diagnosis.

**Eczema as Allergic Phenomenon.**—The effect of adventitious factors, acting nonspecifically to excite a specific reaction in sensitized persons, is particularly prominent in eczema. This disease is a manifestation of an allergic imbalance. Such an interpretation explains the good results of nonspecific treatment and, Vaughan says, reconciles these results with the conception of eczema as a specific allergic disease.

**Public Health Work.**—The greatest obstacle at present to practical and successful health work by state and local officials, in Dowling's opinion, is the unwillingness of the judiciary to bring to trial persons who violate sanitary laws and regulations. In many states prosecuting attorneys are loath to bring charges against physicians or others who wilfully neglect or who refuse to report cases of communicable disease or to send records of births and deaths. Likewise, grand juries seem reluctant to indict violators of the sanitary law brought to them and judges are equally unwilling to find guilty any one who happens to be brought to their attention. The health officer who asks to have the law enforced is neither discriminatory nor vindictive when suggesting that until the law is enforced it will be impossible to get complete and accurate reports vital to public health progress.

**Ureteral Transplantation into Intestine.**—The results of the experiments performed by Folsom and Caldwell on dogs are practically identical with the results of former investigators in their work on experimental hydronephrosis. They afford conclusive evidence that the factor of obstruction rather than infection played the major rôle.

**Experimental Nephrotomy.**—With a desire of controlling postoperative hemorrhage and avoiding destruction of kidney tissue as much as possible, Carson and Goldstein nephrotomized kidneys by two methods, no sutures being used in the kidney in either method. One method consisted in close approximation of the kidney halves, and the other consisted in the transplantation of fat between the kidney halves. The findings were: Nephrotomy in animals without sutures is apparently a safe procedure. Postoperative hemorrhage has not been encountered within nephrotomized kidneys in animals when sutures were not employed. Cessation of bleeding is apparently brought about by the production of a physiologic clot. Approximatin of kidney halves results in less damage than when fat is transplanted. A histologic study of nephrotomized kidneys without sutures demonstrates a minimum destruction of kidney tissue.

## West Virginia Medical Journal, Huntington

19: 505-560 (Oct.) 1924

Psychotherapy. T. A. Williams, Washington, D. C.—p. 505.
Infectious Diarrhea. C. L. Holland, Fairmont.—p. 513.
Primary Endothelioma of Pleura: Two Cases. B. F. Harden, Wellsburg.—p. 521.
Egg Shell in Baby's Larynx. T. W. Moore, Huntington.—p. 522.
Acute Obstruction in Infants. A. G. Rutherford, Welch.—p. 523.
Ethylene. L. D. Norris, Fairmont.—p. 524.

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### FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

551-604 (Sept. 27) 1924

*Early Mental Disease Treated in General Hospital. D. Comrie.—p. 551.
*Pathology and Surgical Treatment of Angina Pectoris. Danielopolu.—p. 553.
*Prolonged Rest in Horizontal Position a Fertile Cause of Puerperal Sepsis. H. Corby.—p. 557.
Dysmenorrhea in Young Women. A. E. Sanderson Clow, L. Phillips.—p. 558.
*Imperfect Urinary Control Following Childbirth, and Its Surgical Treatment. B. P. Watson.—p. 566.
Investigation, Pathology and Treatment of Uterine Hemorrhage. J. Phillips.—p. 568.
*Advisability of Routine Pelvic Examination During Puerperium. M. H. Phillips.—p. 571.
Clinical Symptoms of Pelvic Adenomyomata. W. W. King.—p. 573.

**Mental Cases in General Hospitals.**—Comrie analyzes 500 cases of early mental disease. In order of frequency the cases fall into the following groups: alcoholic cases, 133; melancholia, 87 cases; confusional states, 80 cases; state of dementia, 52 cases; psychoneuroses, 35 cases; postepileptic states, 29 cases; cardiac delirium, 22 cases; mania, 20 cases; gross cerebral lesions, 16 cases; fixed delusional states, 17 cases; primary mental defect, 9 cases. The general principle followed was that patients were put to bed for one or two weeks' rest. By the end of three weeks it was generally possible to determine whether the case was likely to recover under treatment so far as to be able to proceed for a period of convalescence in the country or to return home. If the case appeared likely to recover to this extent under hospital conditions, treatment was continued, but if at the end of about three weeks no improvement was discernible the patient was,

in most cases, passed on to a mental hospital, either after certification, or in some cases as a voluntary admission. The proportion of cases discharged sufficiently well to return home was 72 per cent. of the total; the proportion passed on to mental hospitals was 17 per cent. of the total; the deaths from all causes amounted to 7 per cent. of the total admissions. Transfers to other (nonmental) hospitals accounted for 3 per cent.

**Surgical Treatment of Angina Pectoris.**—Following a discussion of the pathology of angina pectoris Danielopolu sums up the surgical treatment by suggesting that in angina pectoris there should be cut the cervical sympathetic cord, and the vertebral nerve above the inferior cervical ganglion, the nerve of Hofer, or any corresponding nerves present, and the nerves which spring from the cervical sympathetic cord above the superior cervical ganglion and pass to the heart. Thus, while preserving the important centrifugal nerves which are essential to the action of the heart, we are cutting, he says, the greater number of ascending sensory fibers to which is assigned an important part in the launching of the anginal attack. The lateral sensory group which enters the thoracic cord is certainly left intact, but, this group is of only secondary importance. Since the principal site of the anginal attack is the left side of the heart, and it is the sensory nerves of the left side which are mainly affected, the operation must be performed on the left side in the first place. Is it necessary to complete it on the right side? It would be difficult to give any categorical answer, but it is more than likely that in the majority of cases the operation on the left side would be sufficient. None of the surgical methods suggested can yet be considered ideal; it is certain that cervicothoracic sympathectomy must be absolutely abandoned, while each of the other methods has as yet done no more than establish a right to be considered in therapeutics. In the present state of our knowledge regarding the innervation of the heart and aorta in man it is only possible to outline a hypothesis, but research is proceeding.

**Prolonged Rest Cause of Puerperal Sepsis.**—Corby mentions facts that tend to indicate that women who rise after labor, perhaps, in some instances, too soon, are less liable to sepsis than women who remain lying down for a considerable time. Judging from measures taken by Nature during and after labor to get rid of noxious bacteria that may have found entrance into the genital tract, we may assume that an important function of the lochia is to wash out débris that may have remained in the uterus after labor is ended. Another function of the lochia is to flood out any pathogenic bacteria which may have gained entrance to the vagina or uterus. The dorsal decubitus causes the lochia to stagnate in pools in both the uterus and vagina, thus forming veritable forcing beds for the breeding of bacteria. Furthermore, the lochia retained in the uterus, acting as a foreign body, interferes with adequate involution, leaving the cavity larger with freer entrance for the bacteria. Owing to this subinvolution the uterine vessels and lymphatics are not adequately compressed by the muscular fibers, and the bacteria or their toxins can all the more readily get into the general circulation. Once puerperal sepsis develops this state of affairs tends to accentuate matters. Corby says that for years he has been instructing patients to sit up at stated intervals in bed, with as he believes, good practical results.

**Operation for Imperfect Urinary Control After Childbirth.**—Watson dissects out the pubocervical layer of the pelvic fascia by making a transverse incision at the junction of cervix with the anterior vaginal wall; then blunt-pointed scissors are pushed upward for a short distance between the vaginal wall and bladder in the middle line toward the urethra. The scissors are opened out, withdrawn, and the vaginal wall incised for a short distance along the line of separation so effected. This is the method of incision described by Eden and Lockyer. The scissors are again introduced, the points being kept closer to the under aspect of the vaginal wall. If this is done the scissors will pass between the fascia and the vaginal wall, so that when the latter is divided the fascia will be plainly seen. This midline incision is continued to within 1 cm. of the urethral orifice. Each edge of the incision in the anterior vaginal wall is grasped with forceps, and with the handle of the knife the fascia is completely separated from the under aspects of the two flaps. The bladder is pushed up from the supravaginal portion of the cervix, and the fascia is united over it by sutures which grasp it firmly and which cause it to overlap. In the region of the neck of the bladder a firm bite of the fascia is taken with the needle well up towards the pubis, a similar bite on the opposite side, and the suture tied. Two sutures placed in this way tuck the neck of the bladder up under the pubis, and, if a sound be now introduced into the bladder, it can no longer be made to sag away from this situation. In the region of the cervix the sutures which unite the fascia pass through the front of the supravaginal portion (the bladder being held up while the needle is passed), and so the bladder is prevented from slipping down on the cervix again. The redundant vaginal wall is cut away and the edges united with mattress sutures and a superficial continuous one. Repair of the posterior pelvic floor is then performed. Replies from 105 patients, none of whom were operated on less than six months ago, indicated that 65.7 per cent. of the patients had perfect urinary control, that 21.9 per cent. had imperfect but better control than before and that 12.4 per cent. had not been improved.

**Routine Pelvic Examination During Puerperium.**—The best time to make the examination is, Phillips thinks, about the twelfth or thirteenth day; this is a day or two before the hospital patient goes home, or just before private patients are allowed to walk about the bedroom. Should anything abnormal be found demanding more rest and care the patient is thus saved the disappointment of being ordered back to bed. The examination should be a thorough one of inspection and palpation. The doctor's hands and patient's vulva are prepared as if for an examination during labor. A Sims' speculum of suitable size is inserted, and the nature of any discharge and condition of the vaginal walls and of the cervix is investigated. Certain abnormal states will require treatment which can be carried out at once. Digital palpation of the vagina, pelvic floor, and cervix is made; the patency of the cervical canal is ascertained. Normally by the twelfth day the internal os will not admit the forefinger; occasionally it will do so, and then with the assistance of the left hand on the lower abdomen it is possible to explore the cavity of the uterus. Finally the position and size of the uterine body can be ascertained by bimanual examination, and inflammatory or other extra-uterine swellings sought for. Not the least important reason for the examination, is the satisfaction of those fortunate patients to whom one is able to announce that "everything is all right."

697-746 (Oct. 18) 1924

*Discussion on Cardiac Irregularities: Prognosis and Treatment. T. Wardrop Griffith, J. Hay, F. W. Price and W. J. Tyson.—p. 697.

Certifications in Mental Disorders. H. Yellowlees, G. W. B. James.—p. 707.

Effect of London Climate on Captive Animals and Man. N. S. Lucas.—p. 714.

Removal of Part of Safety-Pin from Bronchus of Child by Peroral Bronchoscopy. D. A. Crow.—p. 716.

**Extrasystoles and Pulsus Alternans.**—Griffith says that while some cases of extrasystoles appear to be of no importance, it must be admitted they are more frequent in persons who have cardiac, valvular or muscular lesions and increased blood pressure, that they often persist in spite of treatment, that they may be associated with severe distress, and that their very existence may develop a severe neurosis. In most cases prognosis will depend more on the conditions associated with the extrasystoles than with the actual irregularity itself. In cases with no organic disease of the heart open-air pursuits should be encouraged and a reasonable amount of exercise should be taken. The diet should be light; mastication thorough, and the teeth attended to in order to eliminate oral sepsis. Coffee should be avoided, and tobacco limited. Digitalis should be avoided. It is of interest that some observers claim great benefit in the use of small doses of quinidin, both in extrasystoles and in paroxysmal tachycardia. The condition of the patient in cases of paroxysmal tachycardia is often extremely alarming, and of course some patients die during an attack. The sudden spontaneous cessa-

tion of the attacks makes it difficult to gage the value of the different maneuvers, such as firm pressure on the abdomen, holding the breath after a full inspiration, etc., which are tried to cut them short. Griffith has on more than one occasion given morphin hypodermically during the height of an attack, with the happiest results. In pulsus alternans every second beat is weak, and that without the excuse of being premature as in the case of the pulsus bigeminus. The prognosis of this is so grave it is necessary to mention that a short period of alternans may follow on a premature systole without exciting alarm, but if it shows any tendency to persist the outlook at once becomes serious. The condition may be simulated in heart block, complete or partial, when every second heart beat coincides with an auricular systole which prevents it having its full effect. The occurrence of an intercalated extrasystole, so weak as not to be detected at the wrist, may also simulate the condition, and it may also be found after the administration of atropin. When, however, these extenuating possibilities are eliminated serious myocardial disease must be suspected.

**Premature Heart Beats.**—Hay divides the more common irregularities of the heart into two groups. In the first group are sinus arrhythmia, in which there is a rise and fall in frequency associated with respirations, and the arrhythmia due to the occurrence of premature beats. In the second group are the disorderly action of auricular fibrillation and the alternating pulse. Nearly every patient presenting an irregular action of the heart belongs to one or other of these groups. In the first group the prognosis may be considered good, other things being equal. The presence of premature beats is, however, always an indication that a thorough examination of the patient should be made, especially of those of mature years. The prognosis will depend on the associated conditions. In the second group a guiding factor is the degree of distress induced by the onset of fibrillation; from this it is possible to gage the integrity or otherwise of the myocardium. The ventricular rate is also a guide—the more rapid the rate the more unsatisfactory the outlook; failure to respond to digitalis is an ominous sign, particularly if the fibrillation has been superimposed in a heart handicapped by a high blood pressure. The essential thing is the recognition of the nature of the irregularity present. It is here that the difficulty lies, and it is a matter of moment that every practitioner should make himself familiar with the clear clinical manifestations of the condition.

**Paroxysmal Tachycardia.**—All cases of cardiac irregularity, apart from rare exceptions, are classified by Price as follows: (1) what is called sinus irregularity; (2) irregularity due to premature contraction or extrasystole; (3) irregularity due to heart block—whether sino-auricular, auriculoventricular or intraventricular; (4) irregularity due to pulsus alternans; (5) irregularity due to auricular fibrillation; and (6) irregularity due to auricular flutter. He suggests that the term paroxysmal tachycardia should be employed to denote a condition in which a marked acceleration of the cardiac rate occurs, which commences suddenly and abruptly and without apparent cause, lasts for a varying period, ceases suddenly and abruptly, and is due to an abnormal rhythm—the stimulus for cardiac contraction, instead of arising at the junction of the great veins with the auricle, having its origin at an abnormal point. The vast majority of cases of paroxysmal tachycardia are the result of (1) temporary auricular flutter with tachycardia, or (2) temporary auricular fibrillation with tachycardia, and among other causes are paroxysms of extrasystoles. We should consider the possibility of paroxysmal tachycardia whenever an individual is conscious of a marked increase in the cardiac rate or complains of attacks of palpitation, in either case occurring suddenly and without apparent cause, or suffers from dyspnea on exertion, and other indications of cardiac failure coming on rapidly. In some cases a correct diagnosis cannot be made with certainty even though the polygraph be employed, and electrocardiographic examination being necessary. The most important factors from the diagnostic point of view are: (1) the commencement and termination of the attack of tachycardia. The abruptness of the onset and termination of the tachycardia is a characteristic feature—the maximum rate is attained within a few seconds, and the return of the cardiac rate to what it was prior to the attack occurs equally quickly; whereas in tachycardia associated with a normal rhythm the onset and termination are gradual. (2) The cardiac rate. A persistent rate of over 160 is almost invariably due to an abnormal rhythm, and a persistent rate of over 140 may be due to the same cause. (3) The cardiac rate is not influenced by change of posture or other forms of physical exertion. Within the last few months Price has employed 5 grains—after a preliminary dose of 3 grains, to test for possible idiosyncrasy—of quinidin once daily in several cases of paroxysmal tachycardia, in the intervals between the attacks, to prevent their recurrence, and it has been successful in each.

**Two Most Important Valvular Diseases.**—Tyson says there are two diseases in which it is particularly necessary that rest should be maintained for some time—namely, rheumatic fever and influenza. The two most important valvular troubles are the presystolic and the aortic regurgitant, both of which vary greatly in prognostic value. He knows of only one outstanding heart drug—digitalis—and even this is practically confined to the treatment of auricular fibrillation.

## Lancet, London

**207:** 893-944 (Nov. 1) 1924

*Idealism in Public Health. R. A. Lyster.—p. 893.
Treatment of Mental Disorder. E. Mapother.—p. 897.
Four Neoplasms of External Ear. M. Yearsley and H. G. Butterfield.—p. 902.
Treatment of Filariasis. G. C. Low and W. E. Cooke.—p. 903.
Etiology of Hypertrophy of Tonsils. H. L. Cronk.—p. 904.
Case of Aortic Aneurysm. C. B. Pasley.—p. 906.
*Case of Uveo-Parotitic Paralysis. M. Critchley and P. Phillips.—p. 906.

**Public Health Associations.**—There is no doubt, says Lyster, that the public health service is the proper center for organizing and carrying out schemes of public propaganda. The valuable work accomplished by small local associations for after-care of tuberculous persons and defective school children, and also by those voluntary workers attached to maternity and infant welfare centers all over the country deserves the highest praise and every possible encouragement, but the big associations and "national councils," with whole-time paid officers (a curious kind of "voluntary" work), invariably attempt work which is far better done by officers employed and controlled directly by local authorities. The ideal that public administration should be carried on by public officers and not by voluntary associations can only be departed from with grave danger to the state and to the individual. The expert "voluntary worker" is the popularly elected representative of the public on the various local authorities. His services are purely voluntary and every medical officer of health is the expert administrative officer of a body of genuine "voluntary workers" who are in their turn responsible to the public. It is a curious mentality which puts a halo round self-appointed members of so called "voluntary associations" and their (usually unqualified) officers.

**Uveoparotitic Paralysis.**—Phillips reports a case of uveoparotitic paralysis which presented the syndrome iridocyclitis-parotitis-polyneuritis. The patient was a married woman, aged 51, who complained of arthritis of her knees and intense dryness of the mouth. Two years ago the right side of the face began to swell but caused her no pain. Dryness of the mouth appeared and became much worse three months later, when the left side commenced to swell. For the past six months she has suffered from soreness of her eyes, photophobia, lacrimation, and mistiness of vision. The points of special interest in the case are: (1) the preponderance of the right-sided manifestations; (2) the slight involvement of the cranial nerves and the mildness of all subjective phenomena; (3) the absence of any rash, as reported by Feiling, Viner, and Brewerton; (4) the association of uveoparotitic paralysis with absence of the ovaries. The nature of the disease, Phillips says, is almost certainly that of a chronic infection, although the exact etiology is unknown. Syphilis appears to take no part in the pathogenesis, neither does the previous occurrence of mumps. In this case the pulmonary signs, the pyrexia, and the family history suggest that tuberculosis might be the causative agent, but the coexistence of a septic arthritis rather obscures the picture.

## Archives Franco-Belges de Chirurgie, Brussels

27: 465-559, 1924

Blood Transfusion by the Three Syringe Method. Beraud.—p. 465.
Forward Dislocation of the Head of the Ulna. Moreau and Sternon.—p. 516.
Anterior Luxation of the Ulna at the Wrist. M. Van Neck.—p. 538.
*Bilateral Ureterostomy. M. Duvergey.—p. 541.

**Ureterostomy in Iliac Region.**—Duvergey brought the ureters out through the skin on each side in two patients to divert the urine from the bladder, and has collected eight other cases in which this technic has been applied. This operation is usually the last resort with advanced cancer of the bladder, but it proved a great relief, and many of the patients survived in comparative comfort for several months.

## Bulletin de l'Académie de Médecine, Paris

92: 1007-1025 (Oct. 14) 1924

*Pregnancy After Ovarian Grafting. Tuffier and Bour.—p. 1009.
Remote Consequences of Syphilis in Nasal Pathology. Jacques.—p. 1022.

**Menstruation and Pregnancy After Ovary Grafting.**—Tuffier and Bour emphasize that transplantation, and especially autotransplantation, of an ovary with its pedicle into the uterus is followed by preservation of menstruation, and also the possibility of fecundation. The menses usually reappear in from three to five months, and persist from five to ten years. There is a record now of fifteen pregnancies after such an operation, with normal delivery in ten. Similar results were manifest after auto-ovarian transplantation, total or partial. They have collected twenty-four cases of a subsequent pregnancy in this group, with normal delivery in three, also four instances of pregnancy after transplanting ovarian tissue from another woman into women with certain signs of ovarian deficiency.

92: 1027-1046 (Oct. 21) 1924

Hyperglycemia Test in Diabetes. M. Labbé.—p. 1030.
*Hysterectomy Versus Radiotherapy for Cancer. J. L. Faure.—p. 1040.
*Test of Resisting Power of the Kidney. F. Legueu.—p. 1043.

**Hysterectomy Versus Radium for Uterine Cancer.**—Faure is convinced that hysterectomy should be preferred to radium treatment in cancer of the uterine cervix. He reports a complete recovery in 80 per cent. of his early diagnosed operative cases, with a mortality of less than 3 per cent. in all forms.

**Induced Shock as Test of Resisting Powers of the Kidney.**—Legueu utilizes a spontaneous, or an induced shock to determine the *fragilité rénale*, important in postoperative prognosis. Catheterization is sometimes followed by fever and pain, and then the azotemia, and, if possible, Ambard's coefficient are tested the next day. If a spontaneous shock does not occur, Legueu injects intravenously 250 gm. of hypertonic glucose solution (30 per cent.). The shock does not modify the azotemia if the kidneys are sound; otherwise the slightest shock may increase the azotemia. In cases with unstable kidney functioning, it is advisable to delay the operation until conditions improve.

## Bulletins de la Société Médicale des Hôpitaux, Paris

48: 1375-1416 (Oct. 17) 1924

*Intolerance to Bread. C. Flandin.—p. 1376.
*Diphtheria Anatoxin Skin Test in Children. Lereboullet et al.—p. 1378.
*Tardy Arthritis from Typhoid Bacilli. Dufour and Baruk.—p. 1383.
Curable Hemiplegia from Syphilitic Arteritis. Sézary and Benda.—p. 1386.
Tabes with Osteoperiostitis of Tibia. L. Babonneix and M. Lévy.—p. 1392.
Benefit from Insulin in Hyperthyroidism in a Diabetic. Merklen et al.—p. 1394.
Asthenia in Tertiary Neurosyphilis. R. Benon.—p. 1398.
Paralysis After Preventive Injection of Tetanus Antitoxin. Sicard et al.—p. 1400.
*Idem, with Fatal Termination. Morichau-Beauchant and Fagart.—p. 1406.
Emetin in Amebic Abscess in Lung. P. Emile-Weil and Lamy.—p. 1408.
*Arsphenamin in Blood Transfusion. Flandin and Tzanck.—p. 1411.
Idem in Venesection. C. Flandin and A. Tzanck.—p. 1414.

**Intolerance for Whole Wheat Bread.**—Flandin observed during the war some cases of anaphylaxis to bread, made of whole wheat, in which desensitization was induced by ordinary bread. In some the whole wheat bread exerted the toxic action, in others, ordinary fresh bread. General or specific procedures for desensitization usually failed completely.

**Zoeller's Anatoxin Reaction in Children.**—Lereboullet, Boulanger-Pilet and Lelong employed the diphtheria anatoxin skin test in children, and found the same phenomena as Zoeller found in adults. They agree that the reaction reveals a special hypersensitiveness to the proteins of the diphtheria bacillus. It testifies to an incomplete immunity, diphtheria allergy. They believe that Zoeller's test, like the Schick test, should be introduced into current routine practice. It does not parallel, but supplements the Schick reaction.

**Typhoid Arthritis After Interval of Eight Years.**—Dufour and Baruk describe a case of puriform arthritis of the knee in a man, aged 24, who had had typhoid fever eight years before. The fluid from the knee agglutinated typhoid bacilli instantly in a 1:50 dilution, and, after half an hour, in a 1:100 dilution. Four injections of antityphoid vaccine, one of 0.5 c.c., three of 1 c.c. at two or three day intervals, were followed by complete recovery.

**Paralysis with Fatal Issue After Injection of Tetanus Antitoxin.**—Morichau-Beauchant and Fagart report a case in which a preventive injection of tetanus antitoxin was followed by paralysis of the limbs. The disturbance appeared the day after serum sickness, namely, thirteen days after the injection. The patient died three days later. They interpret the case as an ascending affection of the spinal cord, reaching the bulbar centers.

**Arsphenamin Instead of Sodium Citrate in Blood Transfusions.**—On the basis of 300 transfusions during three years, Flandin and Tzanck regard arsphenamin, which was added to the blood, as superior to all other substances used to prevent coagulation, including even sodium citrate. They report surprising results in two cases of profuse hemorrhage in typhoid, in which 320 c.c. and 250 c.c. of blood were injected, mixed with 0.03 gm. of sulpharsphenamin per hundred cubic centimeters of blood.

## Comptes Rendus de la Société de Biologie, Paris

91: 848-918 (Oct. 24) 1924. Partial Index

*Hydatid Cysts and Radiotherapy. F. Dévé and A. Billiard.—p. 848.
*Stimulation of Immunity by Minimal Infections. C. Zoeller.—p. 858.
Antagonism of Microbes in Vitro. A. Berdnikow.—p. 859.
*Action of Albumose in Dogs. E. Gley and A. Quinquaud.—p. 863.
*Antagonism of Genital Glands in Guinea-Pigs. A. Lipschütz.—p. 865.
No Hormone Effect from Heterografts. A. Lipschütz.—p. 870.
The Urine During Mental Depression. Laignel-Lavastine and R. Cornélius.—p. 872.
*Vasoconstriction in Asphyxia. A. Tournade and M. Chabrol.—p. 873.
*Vaccination by Mouth Against Dysentery. C. Pascal.—p. 874.
Sedimentation of Erythrocytes and Weight of Their Hemoglobin. E. Peyre.—p. 876.
*Rôle of Skin in Movements. M. Osorio de Almeida.—p. 878.
Immunization by Mouth Against Shiga's Bacillus. P. Lesbre and A. Verdeau.—p. 883.
*Mechanism of Coagulation by Rennet. N. L. Cosmovici.—p. 885.
*Acidosis in Anaphylactic Shock. L. Dautrebande and P. Spehl.—p. 889.
*Erythrocytes in Peptone Shock. A. Descamps.—p. 894.
*Vaccination Against Diphtheria by Heated Toxin. F. de Potter.—p. 895.
Test for Immunization Against Diphtheria in Guinea-Pig. F. de Potter.—p. 898.
*Anatoxin in Vaccination Against Diphtheria. Henseval and Nélis.—p. 902.
Action of Calcium and Potassium in Rabbit. P. Regniers.—p. 905.
*Action of Ethylene. J. J. Bouckaert.—p. 907.
Anesthesia and Shock. H. de Waele.—p. 909.
*Hexamethylenamin in Trypanosomiasis in Animals. R. Van Saceghem.—p. 917.

**Hydatid Cyst and Radiotherapy.**—Dévé and Billiard are inclined to conclude from their experiments on rabbits that the roentgen rays do not exert any effectual action on echinococcosis in man. Even deep radiotherapy is unable to sterilize hydatid cysts.

**Stimulation of Immunity by Minimal Infections.**—Zoeller's research on guinea-pigs seemed to show that slight superposed diphtheria infection stimulates the vaccine immunization against diphtheria. On the other hand, an experimental diphtheria infection in a nonvaccinated animal induces general immunity only with difficulty. He assumes that immunization in man is also enhanced when accidental superposed contaminations occur after vaccination, and this without any danger for the patient.

**Action of Albumose on Blood Pressure.**—Injections of albumose, made by Gley and Quinquaud, in thyroidectomized dogs, caused the same decrease in the arterial pressure as in normal dogs.

**Transplanting Testes and Ovaries.**—Lipschütz believes from his experiments on guinea-pigs that the inhibiting action

of the testes on the hormones of an intrarenally implanted ovary, may be annulled by transplanting the testes into the abdominal cavity. Positive results from intratesticular grafting of an ovary, while both testes are present, may be explained by such displacement of the latter.

**Vasoconstriction in Asphyxia.**—Tournade and Chabrol point out that the constriction of vessels in asphyxia is produced by a substance from the suprarenal capsules, which is identical with epinephrin.

**Vaccination by Mouth Against Dysentery.**—Pascal observed two epidemics of dysentery in an insane asylum. In the second epidemic, in 1924, in which preventive vaccination was applied to 399 subjects, only 0.75 per cent. of the 410 inmates developed dysentery, in contrast to the 22.72 per cent. of 256 inmates in the first epidemic, in 1923. The vaccine was administered by mouth, and the ingestion was not followed by any reaction. Pascal advocates periodical vaccinations by way of the mouth.

**Rôle of Skin in Movements and Attitudes.**—Osorio de Almeida's experiments on frogs, in which the skin was removed from limbs, showed that coordination of movements, and sense perception of attitudes are directly dependent on the skin. A similar influence of the skin was manifest in dogs and snakes.

**Mechanism of Coagulation by Rennet.**—Cosmovici's study proved that the coagulation of milk by rennet is not a phenomenon of cleavage, but a mere molecular adhesion. The coagulation is followed by splitting of casein, which is due to the proteolytic action of a rennet ferment.

**Acidosis in Anaphylactic Shock.**—Dautrebande and Spehl are convinced from their research on dogs that one of the acidosis-producing causes in anaphylactic shock is the concentration of hemoglobin coexisting with an increase of free carbon dioxid tension.

**Erythrocytes in Peptone Shock.**—Descamps' method demonstrated that in peptone shock (dog) the erythrocytes grow smaller, corresponding to loss of fluid. The wall of the erythrocytes is as permeable as the capillary endothelium, and the fluid passing out of the erythrocyte carries away with it a part of the proteins.

**Heated Toxin in Vaccination Against Diphtheria.**—De Potter's hypothesis is that the antigenic property of a heated toxin should not be attributed to toxoids, but to some still persisting minimal amount of toxin.

**Anatoxin in Vaccination Against Diphtheria.**—Henseval and Nélis assert that anatoxin contains a large amount of toxoids, which may explain its antigenic action, more pronounced than in the heated toxin, and other antigens. The use of anatoxin in man does not seem to cause any appreciable disturbances.

**Action of Ethylene on Respiration and Circulation.**—Bouckaert declares that ethylene does not depress the respiration center even in an intense and prolonged anesthesia. Contrary to other general anesthetics, ethylene slightly raises the blood pressure. No action was manifest on the isolated frog and rabbit heart.

**Hexamethylenamin and Trypanosomes.**—In Van Saceghem's experiments, hexamethylenamin did not destroy trypanosomes.

## Médecine, Paris

6:1-80 (Oct.) 1924

*Surgery in 1924. P. Mathieu.—p. 5.
Access to Lower Esophagus. R. Grégoire.—p. 19.
Appendicitis and Intestinal Stasis. J. Okinczyc.—p. 21.
Blood Grouping in Surgery. M. Duvoir and F. Derrieux.—p. 25.
Complications of Chronic Appendicitis. A. Chalier.—p. 28.
*Vaccine Therapy in Surgery. L. Bazy.—p. 32.
Fracture of Lower Radius. A. Cauchois.—p. 38.
Indication for Mikulicz Drain. G. Roubier.—p. 44.
Foreign Bodies in Duodenum in Children. A. Martin.—p. 50.
Ureterostomy in Iliac Region. E. Papin.—p. 55.
*Treatment of Anal Fistulas. G. Picot.—p. 61.
Treatment of Inguinal Hernia in the Aged. M. Deniker.—p. 63.
Treatment of Severe Hemorrhage. G. Jeanneney.—p. 67.
Intracardiac Injection of Epinephrin. R. Toupet.—p. 70.
Surgical Treatment of Gallstones in Hepatic and Common Bile Ducts. P. Mathieu. Supplement, pp. 1-32.

**Surgery in 1924.**—In a review of the progress of surgery in the course of 1923-1924, Mathieu insists especially on the acquisitions in the technic of general anesthesia, and the indications for treatment of cancer by surgery or by radiations; also on works relative to diphragmatic hernias, lobectomy of the lung in bronchiectasia, esophagoplasty in megoesophagus, and several methods of intervention in orthopedic surgery, among others Whitman's astragalectomy for deformities of long standing.

**Vaccine Therapy in Surgery.**—Bazy believes that the cure of pyogenic infections by vaccine treatment is due to a phenomenon of intolerance toward the added infection, created by the injection of vaccine. The phenomenon is similar to Koch's phenomenon in pulmonary tuberculosis.

**Treatment for Anal Fistula.**—Picot suggests a method for treating anal fistulas, outside of the sphincter, which consists in cutting out the fistula, and bringing down part of the detached anorectal mucosa to cover the inner opening. The outer opening is merely tamponed, and it heals in three or four weeks.

## Paris Médical

325-340 (Oct. 25) 1924

*Spontaneous Immunization Against Diphtheria. P. Lereboullet and P. Joannon.—p. 325.
Congenital Syphilis and the Nervous System. André-Thomas and Long-Landry.—p. 331.

**Spontaneous Immunization Against Diphtheria in Hospital.**—Lereboullet and Joannon observed for over a year 113 children, aged from 2 to 15, in a surgical ward, where diphtheria occurs sporadically. They noted even a lower rate of positive Schick reactions, than those reported by the Americans, namely, 22 per cent. The age of the children did not seem to exert any influence, but the length of the sojourn in the hospital was important. The Schick reaction was never positive in any of the children after a sojourn of a year. The immunity is gradually acquired. In three out of sixteen, the positive Schick reaction changed to negative. There was no instance of a change from a negative into a positive reaction. Intercurrent mild acute tonsillitis may be considered as an attenuated form of diphtheria, and such attacks are evidently a factor in the immunization process in the hospital.

## Presse Médicale, Paris

32:841-848 (Oct. 25) 1924

*Latent Mastoiditis in Otitis Media. P. Bertein.—p. 841.

32:849-856 (Oct. 29) 1924

*Biliary Colic and Protein Shock. G. Parturier.—p. 849.

**Latent Mastoiditis in Course of Acute Otitis Media.**—Bertein calls attention to a latent form of mastoiditis, occurring without any local signs, when the otitis media seems to be on the road to recovery. In one of three cases, the onset was manifested by digestive disturbances, in another by a grave condition of the pulse. Immediate trephining is indicated, even if radiography is negative. The persistence or appearance of any signs of general infection suggests the diagnosis.

**Biliary Colic and Protein Shock.**—Parturier believes that hepatic colic may be considered as a reaction of the gallbladder, rich in lipoids, and especially in cholesterol, to a general protein shock. Or, some toxic substance, released by the shock, may cause irritation of the gallbladder, as it is eliminated with the bile. The two phenomena may be combined. The conditions producing the colic, which are similar to those preceding an attack of gout, testify to a protein shock, rather than to a duodenum-gallbladder reflex.

## Revue Française d'Endocrinologie, Paris

2:233-300 (Aug.) 1924

*The Thyroid and the Nervous System. A. Oswald.—p. 233.
The Glycolytic Function of the Lung. P. Mauriac.—p. 247.
*An Asexual Cock. O. Berner.—p. 258.
*Addison's Disease with Acroparesthesia. A. Hanns.—p. 265.
*Correct Name for Thyroiden Ima. E. Olivier.—p. 275.
Pineal Extract in Treatment of Addison's Disease. C. I. Urechia and N. Elekes.—p. 281.

**The Thyroid and Its Hormone.**—Clinical observation proved to Oswald that the thyroid gland causes sensitization of the sympathetic, as well as of the parasympathetic elements of the vegetative system. Hyperthyroidism produces diarrhea

in subjects with parasympathetic hypertonia, and constipation in those of sympathetic type. Ingestion of thyroid extract is followed by hyperthyroidism, which shows its action on the nervous system through a hormone. Thyroglobulin is the hormone, and contains all the iodin of the gland, which is inclosed in the colloid substance of the vesicles. Consequently the hormone may be considered as a part of the colloid, and the latter as the product of the secretion of the gland. Thyroxin does not increase the excitability of the vegetative nervous system. Therefore he does not believe that it is the true hormone.

**An Asexual Cock.**—Berner observed a cock which was considered asexual on account of the absence of any sexual manifestations. Microscopic examination showed normal structure of both testes, and no female sexual organs, confirming that the functioning of an endocrine gland does not depend on its structure. The deficient development, and the presence of a cyst and colloid spots in the pituitary body may explain the anomaly in this cock.

**Case of Addison's Disease with Acroparesthesia.**—Hanns describes a case of Addison's disease accompanied by acroparesthesia, thus adding a second case to the one observed by him two years ago. He claims that no other cases have been published to date. The vasomotor disturbances were marked by ischemia, stiffness and numbness in the fingers. The attacks were brought on by cold, and persisted from fifteen to thirty minutes.

**Proper Name for Deep Thyroid Artery.**—Olivier's anatomic study apparently proved that the middle thyroid artery of Neubauer should be called the middle thymothyroid artery, on account of its connection with the thymus.

## Revue de Médecine, Paris

41:1-64, 1924

*Tuberculous Encephalitis. J. Dechaume and P. Sédallian.—p. 1.
Insufficiency of the Liver in Scurvy in Adult. Cain et al.—p. 36.
*Rheumatic Endocarditis. E. Cottin and M. C. Saloz.—p. 47.
Modern View of Gastro-Intestinal Pains. H. Godlewski.—p. 60.

**Tuberculous Encephalitis.** — Dechaume and Sédallian remark that the meninges are not involved in tuberculous encephalitis in adults so often or so much as in children. In three cases described, the mental disturbances of a confusional type, with slight and transient symptoms suggesting meningitis, coincided with symptoms of the flaring up of a tuberculous process in the lung. This suggested a toxic influence on the brain, and this diagnosis was confirmed by the recovery, the three young women leaving the sanatorium clinically cured of their tuberculosis. Tuberculous encephalitis may present the clinical picture of lethargic encephalitis or of a brain tumor. In another case described, necropsy revealed hemorrhagic encephalitis and pulmonary tuberculosis. The symptoms had been those of subacute encephalitis, convulsions and myoclonia in the course of pregnancy albuminuria. The kidneys were apparently sound. No bacteria could be found in the brain.

**Endocarditis in Malaria.**—Cottin and Saloz relate that in five of the seven cases they describe there was a history of febrile rheumatism in youth. Intercurrent malaria in the twenties aggravated the latent heart disease, calling attention to the heart for the first time. It is not the single malarial attack so much as the recurrence of the debilitating attacks that breaks down the compensation.

41:65-128, 1924

Biologic Research on Cancer. G. Roussy.—p. 65.
*Experimental Research on Death from Burns. J. Olbrycht.—p. 81.
Deceptive Camouflage of Malaria by Quinin. Trabaud.—p. 116.

41:129-192, 1924

Vertigo and Cardiovascular Disease. C. Laubry.—p. 129.
Duodenal Intubation and Its Applications. E. Libert.—p. 155.
Enteroptosis. F. Trémolières.—p. 173.
Recent Works on Pathology of Digestive Apparatus. H. Godlewski.—p. 183.

**Pathogenesis of Death from Burns.**—Olbrycht relates that only in the suprarenals were anatomic changes found after primary severe burns in man and animals. The intensity of the hyperemia and ecchymoses, reduction or total loss of chromaffin substance and lipoids in the suprarenals, seem to depend on the extent of the burned area and the age of the subject, most pronounced in the young. In five fatal clinical cases and two rabbits and three dogs, all dying from the effects of burns, the epinephrin content of the suprarenals was low or totally absent. The Abderhalden reaction was pronounced with suprarenal substance. The suprarenals displayed the same type of changes as in anaphylactic shock and peptone intoxication. He ascribes these changes to a toxic action from decomposition of protein in the burned tissues. The practical conclusion is the necessity for clearing out the devitalized proteins in the burned area, and the necessity for stimulating suprarenal function or substituting it with epinephrin.

## Schweizerische medizinische Wochenschrift, Basel

54:953-976 (Oct. 16) 1924

*Reflexes in the Insane. H. Bersot.—p. 953.
*Pleural Effusion in Pneumothorax. C. Verdina.—p. 956.
Canned Albumin Milk. P. Rybiner.—p. 961.
Cervical Cesarean Section. H. Huber.—p. 963. Cont'd.

**Reflexes in the Insane.**—Bersot emphasizes the variability of the reflexes in insanity, and their dependence on the psychic condition of the patient. The so-called sympathetic reflexes are important, as well as the conditional group.

**Pleural Effusion in Pneumothorax.**—Verdina uses tuberculin and ultraviolet rays in the treatment of patients who develop a pleural effusion in the course of artificial pneumothorax.

## Riforma Medica, Naples

40:961-984 (Oct. 13) 1924

*Diuresis After Elevation of Legs. G. Poggio.—p. 961.
Flocculation Tests in Tuberculosis. F. P. Tinozzi.—p. 965.
*Vaccination Against Scarlet Fever. M. Gioseffi.—p. 968.

**Diuresis After Elevation of Legs.**—Poggio had instructive results with Kauffmann's test of decompensated water-salt metabolism. The diuresis does not increase in reclining healthy subjects when the foot of the bed is raised, and in grave decompensation. It increases in moderate cardiac insufficiency, as well as in nephritis, and justifies the prediction of impending edema. Artificial stasis in the lower extremities causes increased diuresis when the constriction is released.

**Vaccination Against Scarlet Fever.** — Gioseffi injected Caronia's vaccine in eighty-seven inmates of an educational institution during an epidemic of scarlet fever. None of the vaccinated boys contracted the disease.

## A. M. M. Mexico City

2:467-538 (Oct.) 1924

Experiences with Appendicitis. J. Rojo de la Vega.—p. 469.
*Physiologic Constants in the Valley of Mexico. F. Ocaranza.—p. 475. Cont'd.
Chronic Urethritis and the Practitioner. L. Rivero Borrell.—p. 491.
The Obsequies of the Electronic Method. F. de P. Miranda.—p. 513.
The Child Welfare Work Station. B. Bandera.—p. 516.

**Physiologic Constants at the Altitude of Mexico City.**—In this first instalment of Ocaranza's report on extensive research in this line by himself and his pupils, he discusses the blood, comparing his findings with those published by others in respect to similar altitudes.

## Prensa Médica Argentina, Buenos Aires

11:417-456 (Oct. 10) 1924

*Caterpillars for Experimental Research. S. Mazza.—p. 417.
*Rise in Blood Pressure with Cardiac Insufficiency. A. Navarro.—p. 421.
*Inoperable Gastric Cancer. A. Pedrajas.—p. 424.
*New Property of Serum of Cancer Rats. A. H. Roffo.—p. 429.

**Caterpillars in Laboratory Experiments.**—Mazza expatiates on the value of the larvae of *Galleria mellonella* as subjects for experimental research. They are susceptible to microorganisms which are saprophytes in vertebrates, and are refractory to the pathogenic. They are the only instance known of a member of the animal kingdom which feeds exclusively on beeswax.

**Cardiac Insufficiency with Rise in Blood Pressure.**—Navarro accepts that the heart is relatively capable when the tension increases with encroaching insufficiency, but increased peripheral resistance, or exaggerated demand, or change in

the blood itself may be further factors. In the sixteen cases tabulated, the blood pressure was high to start with in about 67 per cent., normal in 13 and subnormal in 13, so that the differential pressure is no criterion of the useful work of the heart with impending exhaustion of contractility.

**What Can Be Done for Inoperable Gastric Cancer.**—Pedrajas outlines various measures to relieve conditions but insists that repeated lavage of the stomach is the fundamental indication. In spite of its inconveniences and detractors, this is the only means to relieve the atrocious suffering. When the fluid comes away clear, he pours in a little milk with meat powder, supplementing the lavage with saline by the rectum.

**Refractometric Findings with Cancer.**—Roffo relates that serum from cancer subjects with a given refractometric index modifies the refractometric index of normal serum in a way that cannot be explained by the mere volume of the serum added. In a group of sixteen rats with transplanted cancers, the refractometric index of normal horse serum was increased by 10 to 27 when the cancer serum was added, up to the seventeenth day of the growth of the tumor. Then the index changed abruptly to minus 156 in a week, and continued minus.

## Deutsche medizinische Wochenschrift, Berlin

**50:** 1431-1462 (Oct. 17) 1924

Conception and Sterility. H. Sellheim.—p. 1431. Cont'd.
*Epinephrin Mydriasis. G. Lepehne and E. Schlossberg.—p. 1433.
*Renal or Extrarenal Hypertension. M. Rosenberg and F. Munter.—p. 1437.
*Duodenojejunal Stenosis. Tellgmann.—p. 1440.
*Diazo Reaction in Pulmonary Tuberculosis. K. Lemmens.—p. 1442.
*Epidemic of Muscular Rigidity. Lawetzky.—p. 1444.
*Heart Development in Amphibians. P. Stöhr, Jr.—p. 1444.
Excess Percentage of Boy Births. R. Fetscher.—p. 1445.
Action of Serum on Tuberculin. M. Schlegel.—p. 1446.
Treatment of Felons. Buschmann.—p. 1446.
*Pityriasis Rosea in Infants. J. Breuer.—p. 1447.
Fight Against Venereal Disease in Denmark. H. Haustein.—p. 1448.
Correspondence of Physician to Philip II. F. Lejeune.—p. 1450.
History of Treatment with Bougies. F. Lejeune.—p. 1450.
Tuberculosis and Sleeping Sickness in Africa. Steudel.—p. 1450.
Present Status of Surgical Treatment of Epilepsy. F. Franke.—p. 1460.

**Epinephrin Mydriasis.**—Lepehne and Schlossberg found that epinephrin mydriasis has no diagnostic value.

**Renal or Extrarenal Hypertension.**—Rosenberg and Munter observed three patients with extreme cystic degeneration of the kidneys. The blood pressure was normal or only slightly increased. Similar observations in cases of destruction of the kidneys by pyelonephritis or tuberculosis, and in one case of azotemic glomerulonephritis confirm their opinion on the extrarenal cause of hypertension.

**Duodenojejunal Stenosis.**—Tellgmann's patient was a girl, aged 20, with all the clinical and roentgenologic signs of stenosis of the duodenojejunal flexure. She died from general atrophy (weight 24 kg.). Necropsy revealed no cause for the stenosis except the atonia of the abdominal muscles. Extensive pulmonary tuberculosis, which had not caused any clinical symptoms, was a surprise at the necropsy.

**Diazo Reaction in Pulmonary Tuberculosis.**—Lemmens noted that death followed the appearance of the diazo reaction in pulmonary tuberculosis in about three months and one week. Unless a pneumothorax is possible, it is quite useless to send such patients to a sanatorium. One patient died six hours after arriving at his institution. He gives morphin freely after the reaction appears.

**Epidemic of Muscular Rigidity.**—Lawetzky describes a peculiar disease which has been affecting since last August the population at the eastern parts of the Haff, a fresh water lake near Königsberg. The affection begins with pains in the extremities and a sudden rigidity of all their muscles. Headaches and vomiting are frequent. The rigidity soon subsides and the patients are able to work in a few days. Only three of them died, most probably from other causes. Hemoglobinuria is present regularly in the beginning, but there is no fever. The disease has occurred so far only in the eastern part into which the Königsberg sewers drain. The sewage may contain selenium. Chiefly fishermen were affected; several attacks were observed in some of them. There is also a high mortality among the water birds.

**Heart Development in Amphibians.**—Stöhr cultivated the undifferentiated hearts from amphibian embryos after surrounding them with the ectoderm. The heart develops atypically although it beats. Consequently not all the formative factors are contained in it. When the heart was implanted in a young embryo, after turning it 180 degrees, it beat and expelled the blood in the correct direction. In older embryos it was impossible to invert its contractions, and the animals died with edema. When hearts were implanted in other animals, and received a sufficient blood supply, the own heart of the animal changed. Muscarin brought it to a standstill, but it had no action on the implanted heart.

**Pityriasis Rosea in Infants.**—Breuer attributes pityriasis rosea in infants to the use of new unwashed clothes.

## Klinische Wochenschrift, Berlin

**3:** 1889-1936 (Oct. 14) 1924

Mechanism of Coordination. P. Hilpert.—p. 1889.
*Sensory Fibers of Anterior Roots. W. Lehmann.—p. 1895.
*Hemoclasis in Prurigo. W. Brack.—p. 1898.
*Antagonism Between the Sex Glands. A. Lipschütz.—p. 1903.
Alimentary Leukocyte Changes. O. Götthe and K. Waltner.—p. 1907.
*Uric Acid. G. Rosenfeld.—p. 1908.
*Pneumoconiosis. A. Böhme.—p. 1909.
Serodiagnosis of Tuberculosis. F. Mündel.—p. 1912.
*Hypoglycemia and Glucose Metabolism of Brain. K. Takahashi.—p. 1914.
*Blood Cholesterol After Saponin. Kofler et al.—p. 1914.
*Treatment of Rumination. E. Jenny.—p. 1915.
Tuberculous Spondylitis. A. Brüning.—p. 1916.
*Tuberculous Heredity and Exposure. E. Hoffstaedt.—p. 1919.

**Sensory Fibers of Anterior Roots.**—Lehmann believes that the afferent pathway of deep sensibility and pain passes through the anterior spinal roots. This would explain the failures of Förster's operation.

**Hemoclasis in Prurigo.**—Brack examined the blood changes in sixteen additional prurigo patients after ingestion of milk or other substances. He believes that the changes he found indicate a hemoclastic crisis. He had good therapeutic results with 5 mg. of peptone taken one hour before the meals.

**Antagonism Between the Sex Glands.**—Lipschütz succeeded regularly in feminizing male guinea-pigs by intrarenal ovarian grafts, if the spermatogenesis was inhibited by total or partial castration or at least by experimental cryptorchism. The inhibition of the ovarian hormones by intact testicles is not necessarily connected with any histologic changes of the ovarian implants. Subsequent extirpation of the testes was followed by all the signs of feminization, as if a bolted door had been thrown open (*entriegelungsversuch*).

**Uric Acid.**—Rosenfeld reviews the experiments he made with Lebinski and Hoffmann: alcohol, glycerol and phenylcinchoninic acid increase the production of uric acid by their catalyzing action on the oxidation of exogenous and endogenous purin compounds. The elimination of uric acid is enhanced by the two latter substances. Alcohol seems to impair the secretion of uric acid by the tubules.

**Pneumoconiosis.**—Böhme analyzed chemically the lungs of miners. Coal does not cause induration of the lungs if its concentration is under 1.4 per cent. There is marked pneumoconiosis with half this amount of stone dust. The black color of a lung and the presence of coal particles do not prove that the induration is due to coal inhalation. Stone dust, present in much smaller amounts, may be the cause.

**Hypoglycemia and Glucose Metabolism of Brain.**—Takahashi fed rats and rabbits with peptone or thyroid preparations until the liver was practically free from glycogen. Subsequent phlorhizin injections and exertions lowered further the carbohydrate content of the whole body except of the central nervous system. No hypoglycemic syndrome was noted. The carbohydrate content of the brain was normal after insulin injections except when they induced convulsions.

**Blood Cholesterol After Saponin.**—Kofler, Kollert and Susani observed an increase in the cholesterol of the serum after intravenous injections of a saponin.

**Treatment of Rumination.**—Jenny describes the history of a boy, 5½ months old, who ruminated after every meal, and lost considerably in weight. He recovered when a stomach tube fitted with a rubber bag was introduced after the meals and inflated (Siegert's method).

**Tuberculous Heredity and Exposure.**—Hoffstaedt admits that a predisposition may play some part, but declares that the main source of tuberculosis is exposure to the infection. Every active tuberculosis is dangerous, no matter whether tubercle bacilli are found or not.

## Medizinische Klinik, Berlin

20: 1453-1486 (Oct. 19) 1924

Syphilitic Arthritis. S. R. Brönauer and J. Hass.—p. 1453.
*Ovulation and Menstruation. O. Grosser.—p. 1456.
*Indirect Estimation of Size of External Os. E. Weinzierl.—p. 1458.
*Tics in Encephalitis. B. Fischer.—p. 1459.
Congenital Syphilis. C. Nelken.—p. 1462.
*Calculi in Lungs of Stone-Cutters. E. Broch.—p. 1464.
*Contracture of Thumbs in Children. G. Hauck.—p. 1465.
Nodose Periarteritis. Spindler.—p. 1466.
Colloids of Organs and Blood. E. Bloch.—p. 1469.
Obstetric Breviary. F. Eberhart.—p. 1471. Cont'n.
Recent Works on Syphilis. F. Pinkus and L. Kleeberg.—p. 1472.
Recent Works on Gastro-Intestinal Diseases. W. Wolf.—p. 1473.

**Ovulation and Menstruation.**—Grosser believes that neither the ovule nor the spermatozoon can survive long. In spite of this, conception is possible at any time with the probable exception of the first day of the menses. He believes that the spontaneous ovulation occurs in the middle of the menstruation interval. At times the follicle may not burst but the ovule may still be fertilized. The follicle may also break during coitus.

**Indirect Estimation of Size of External Os.**—Weinzierl had excellent results in 1,000 cases with Schatz-Unterberger's indirect metliod for examination of the size of the external uterine orifice in labor: A transverse groove, which is two finger-breadths above the symphysis, corresponds to opening of the external os to the size of a silver dollar. Three finger-breadths indicate the size of the palm, and four, a complete dilatation in normal and pathologic cases. The method is especially valuable when colpeurysis or procteurysis prevents direct examination.

**Tics in Encephalitis.**—Fischer draws attention to pathologic movements resembling tics as sequelae of encephalitis. The movements are sometimes preceded by obsessions, which may have a distinct formative influence on the tics. He also observed circle movements in one boy, aged 13.

**Calculi in Lungs of Stone Cutters.**—Brock observed a case of calculosis of the lungs in a tuberculous stone cutter. Contrary to expectations, the calculi consisted of calcium phosphate and carbonate. He denies the direct connection with the occupation, and believes that secondary tuberculous infection was the cause.

**Contractures of Thumbs in Children.**—Hauck observed four cases of flexion contracture of the thumbs in small children. Jerking of the finger due to a thickening of some point in the tendon or its sheath had preceded the condition which was merely a reaction to the pain. The surgical treatment is simple.

## Münchener medizinische Wochenschrift, Munich

71: 1455-1490 (Oct. 17) 1924

*Haff Disease. F. Seeger and G. Tidow.—p. 1455.
*Pulmonary Gangrene. K. Kissling.—p. 1457.
Prolonged Anesthesia in Treatment of Psychoses. Wiethold.—p. 1460.
*Vasomotor Nasal Reflex. O. Muck.—p. 1461.
Bone Hematoma in Rickets. F. J. Lang.—p. 1463.
*Innervation of Abdominal Organs. I. Rasdolsky.—p. 1464.
Microdetermination of Blood Sugar. E. Becher and E. Herrmann.—p. 1464.
*Size of Erythrocytes. H. Kämmerer and W. Wack.—p. 1465.
*Meiostagmin Reaction. H. Grevé.—p. 1466.
*Hemosiderin in Brain in General Paralysis. B. Ostertag.—p. 1467.
Typical Site of Dry Pleurisy. G. Fischer.—p. 1468.
Mucous Ascites. C. Prima.—p. 1469.
*Diabetes and Acidosis. S. J. Thannhauser and G. Tischhauser.—p. 1469. Conc'n.
Complications of Pulmonary Tuberculosis. K. H. Blümel.—p. 1471.
Expert Testimony in Insanity Cases. M. Isserlin.—p. 1473.
The Arabic and Scholastic Periods in the History of Medicine. G. Honigmann.—p. 1475.

**Epidemic of Muscular Rigidity.**—Seeger and Tidow report on the "Haff disease," on which an abstract is published above. They attribute the muscular rigidity to the pains. Moderate leukocytosis with prevalence of polymorphonuclears was found. The urine contained methemoglobin. The temperature was always normal. Recurrences were frequent. Tidow injected 5 c.c. of blood from one of the patients into himself. No disease resulted.

**Pulmonary Gangrene.**—Kissling cultivated the anaerobic *Streptococcus putridus* from all the nineteen patients with pulmonary gangrene he has encountered in the last four years. He considers the fusiform bacilli as saprophytes. Arsphenamin is excellent in central gangrene. Peripheral foci cannot heal without operation.

**Vasomotor Nasal Reflex.**—Muck observed in asthma patients a peculiar silvery pallor of the anterior part of the lower and middle turbinates and on the tuberculum septi. When he stimulated these parts mechanically, after application of epinephrin, in patients with sympatheticotonic migraine, white spots appeared and lasted for a long time. Red spots were persistent in asthma and vasomotor rhinitis.

**Innervation of Abdominal Organs.**—Rasdolsky examined patients with abdominal affections for the presence of Head's zones of hyperalgesia and for hyperesthesia of the external auditory meatus. He concludes that the paired organs—including the left kidney—are innervated by the vegetative system of the same side; the other organs—including the appendix—from both sides, although not equally.

**Size of Erythrocytes.**—Kämmerer and Wack stain a specimen of blood from the patient, after fixation in Hayem's solution. A specimen of normal blood, prepared in a similar way, but treated with another dye, serves as a standard for estimation of the size of the cells.

**Meiostagmin Reaction.**—Grevé used caproic acid as antigen for Izar's meiostagmin and precipitation test for cancer. The technic is given. All the cancer patients gave positive reactions, which also occurred in pregnancy and in grave cachexia. Sarcoma patients were negative.

**Hemosiderin in Brains in General Paralysis.**—Ostertag confirms the pathognomonic significance of hemosiderin in the adventitia of the vessels of the brain cortex and neostriatum in progressive paralysis. This is evident, however, only in correct sections. In smears from the brain, hemosiderin may be found in other affectjons, especially syphilitic meningitis. The structure of the cortex is rarely preserved in specimens obtained by exploratory puncture in vivo.

**Diabetes and Acidosis.**—Thannhauser and Tischhauser admit that the theoretical basis of the ketogenic ratio is correct. In spite of this, experience with severe diabetes has disproved its significance. Such patients lose their acidosis on a diet containing much fat and little protein, but develop it immediately after larger protein intake. A diet low in calories, carbohydrates and proteins is the best.

## Wiener klinische Wochenschrift, Vienna

37: 1081-1104 (Oct. 16) 1924

*Status Degenerativus. J. Bauer.—p. 1081.
*Stagnation of Cancer Research. A. Greil.—p. 1083.
Cause of Ulcer Pains. J. Vándorfy.—p. 1086.
Preventive Extraction of Foot in Breech Presentation. Katz.—p. 1088.
*Stimulation by Change of Electric Current. F. Deutsch.—p. 1090.
"Paralysis After Vaccination Against Hydrophobia." F. Schweinburg.—p. 1093.
*Weight of the New-Born. J. Bondi.—p. 1093.

**Status Degenerativus.**—Bauer estimates as the borderline between the normal standard and anomalies those variations which occur in less than 4.5 per cent. of a population. This arbitrary limit is chosen partly because of mathematical consideration of variants, partly because of its clinical usefulness. He admits that single anomalies may be found in everybody. If, however, many stigmata occur in the same subject, he calls it "status degenerativus," and believes that it is the best founded universal constitutional anomaly. Nobody would believe that a deformed ear signifies a predisposition to insanity or criminality. Nevertheless, the physician who would deny a clinical or biologic significance to an accumulation of several such anomalies would show a lack of intuitive understanding of biologic relations and clinical phenomena. Medicine means more than applied physics, chemistry and bacteriology. The average type is the result of the age-long adaptation of the race. He regards every variation as biologically inferior, even if it may be an actual advantage. He agrees with Jens Paulsen in distinguishing

between the possible different views on low pigmentation: Its hereditary aspect is a mutation by loss of a character. An anthropologist may consider it a racial variation; a physician, a degeneration; a politician, a sign of a superior race.

**Stagnation of Cancer Research.**—Greil accuses Roux' fatalistic theory of the germ plasm and determinants as the cause of the present stagnation in the research on the pathogenesis of cancer. He does not believe that the normal development of the embryo is simply run by the machinery of chromosomes according to an invariable plan. He believes that both the normal and the pathologic development are a sequence of reactions to a normal or pathologic change of conditions. The whole cellular constitution without any localization has to be kept in mind in every step of development. The phylogenetic acquisitions of the formations and organs which are now characteristic of the species are not insured beyond possibility of loss in the germ cells. They are obtained by the regular return of the metagamic conditions (occurring after impregnation of the ovum). The localized development of tumors cannot differ essentially from this development of organs. Just as the development of organs is not induced by any living agents, one cannot imagine a single causal agent as responsible for the development of cancers. The cancer patient is, at the beginning of the malignant disease, in a higher state of vitality, and a general derivative treatment—such as strict diet, venesection, laxatives, sweating, infections—would seem rational to Greil. Calcium injections might reduce the vitality of the tumor cells. Scientific research should be focused on the genesis and prevention of cancer when it appears for the first time in a healthy family.

**Stimulation by Change of Current.**—Deutsch found an increase in the intensity of a galvanic current when changing the direction after a time. This is due to the additional energy of the polarization current.

**Weight of the New-Born.**—Bondi publishes Vienna statistics on the weight of new-born infants before, during and after the war. There was a distinct decrease from an average weight of 3,201 in 1913 to 3,023 in 1919. The underweight class, especially, was more numerous.

## Zentralblatt für Gynäkologie, Leipzig

**48**: 2281-2328 (Oct. 18) 1924

Gas Phlegmon in Uterine Myoma After Abortion. E. Fraenkel.—p. 2283.
*Blood Content of Abdominal Walls. J. Novak.—p. 2283.
Uterine Polymorphocellular Sarcoma. F. Azzola.—p. 2285.
Torsion of Fallopian Tubes. G. Schwarzwaller.—p. 2287.
Preservation of Navel in Operation on Pendulous Abdomen. E. Schepelmann.—p. 2289.
Suspension of Uterine Cervix by Uterosacral Ligament. W. Pfeilsticker.—p. 2290.
*A Complication of Placenta Praevia. H. Sieben.—p. 2292.

**Periodic Ischemia in Abdominal Walls.**—Novak states that the blood content in the abdominal walls is low immediately after the menses. It increases steadily until a new corpus luteum is formed, and up to the occurring of the menses. Then it decreases rapidly during menstruation. Therefore, the period after menstruation is the most favorable for a laparotomy, to avoid hemorrhage.

**Clubhands Mistaken for Clubfeet in Case of Placenta Praevia.**—Sieben reports a case of placenta praevia in which the arms of the fetus were taken for the legs. Deformity of both hands was the misleading factor.

## Zentralblatt für innere Medizin, Leipzig

**45**: 833-848 (Oct. 11) 1924

Shock Treatment and the Sympathetic. R. Uhlmann.—p. 833.

**48**: 849-880 (Oct. 18) 1924

*Reducing Substances of the Blood. H. Pribram and O. Klein.—p. 850.

**Reducing Substances of the Blood.**—Pribram and Klein found no parallelism between the various fractions of nonprotein nitrogen and the amount of reducing substances in the blood. Hypoglycemia was frequent in nephroses, hyperglycemia in nephritis. There were indications that the hyperglycemia is caused by the uremic toxicosis rather than by a retention. The liver seems to play a part in the pathogenesis of this hyperglycemia, but the sugar is lowered in extreme insufficiency of the liver.

## Casopis lekaruv ceskych, Prague

**63**: 1513-1548 (Oct. 18) 1924

Occult Bleeding. V. Kreisinger.—p. 1513.
Optic and Auditory Perception of Speech. M. Seemann.—p. 1518.
*Equivalent of Ganser's Syndrome. V. Vondracek.—p. 1523.
Treatment of Gastric and Duodenal Ulcer. V. Maydl.—p. 1527. Cont'n.
Anatomic Basis of Sex Abnormalities. H. Bondy.—p. 1531. Cont'n.
Non-Acid Resistant Stages of Tubercle Bacilli. Eiselt.—p. 1535.

**Equivalent of Ganser's Syndrome.**—Vondracek's patient presented Ganser's symptom after committing a foolish larceny. Later on he tried to forget this period. When asked about it, he cried and begged not to be reminded of it. The details are analyzed, and a parallel to the law passed by the Athenians is mentioned. They voted to punish with death any mention of the humiliating occupation of Salamis. Every one of us, he adds, has his Salamis, and cannot bear to have it mentioned.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

**2**: 1575-1690 (Sept. 27) 1924

The Campaign Against Anopheles Maculipennis at Amsterdam. N. H. Swellengrebel.—p. 1576.
*Reducing Potency of Blood in Vitro. Sluiter and Kok.—p. 1592.
*Diathermy in Gonorrhea. F. H. H. Reijnders.—p. 1600.
Dysmenorrhea with Malformed Uterus. C. G. N. Noë.—p. 1606.
Spirochetes in Brain of Adolescent with General Paralysis. L. Bouman and S. T. Bok.—p. 1611.
Case of Sarcoma of the Prostate. A. G. J. Herwans.—p. 1614.
*Some Family Budgets. G. F. G. Meerburg.—p. 1634.

**Reducing Power of the Blood in the Test Tube.**—Sluiter and Kok conclude from their extensive research on glycolysis in vitro that only the assumption of some intermediate product with reducing power can explain the wide variations in the reducing power of the blood from different individuals.

**Diathermy in Treatment of Gonorrhea.**—Reijnders applied diathermy in treatment of acute gonorrheal urethritis in eleven cases. Two of the patients were unable to tolerate the heat (between 42 and 44 C.), but the others completed the course and eight were promptly and completely cured, as also five of seven with chronic gonorrheal urethritis. The failures were all on account of lurking lesions in the posterior urethra, but even these sometimes yielded.

**Family Budgets.**—Meerburg analyzes the expenditures of eighty-two middle class and thirty-two workmen's families at Amsterdam, a total of 515 persons. Food took 40.3 per cent. of the income in the first group and from 52.3 to 55.9 per cent. in the second group.

## Acta Medica Scandinavica, Stockholm

**61**: 1-106 (Oct. 15) 1924

Loss of Chest-Abdomen Reflex with Herpes Zoster. A. Barkman.—p. 1.
*Microtest for Chlorin in Blood, etc. Claudius.—p. 4.
*Reflex Disturbances with Herpes Zoster. N. Ahlen.—p. 8.
*Essential Hypertension. II. W. Kerppola.—p. 14.
*Test Tube Serum Tests of Bactericides. F. Wulff.—p. 20.
Erythema Nodosum in Young Woman. A. Aronson.—p. 42.
Simple Test to Locate Spinal Tumors. K. Pákordy.—p. 48.
*Causes of High Blood Pressure. A. Faber.—p. 53.
*Length of Incubation Period in General Paralysis. F. Wiesel.—p. 61.

**Microdetermination of Chlorin in Blood and Other Protein-Containing Fluids.**—Claudius adds a given quantity of silver nitrate to the fluid, and then removes all proteins with nitric acid which dissolves out all the silver compounds except silver chlorid. He then titrates with alcohol and potassium rhodanid the silver not bound by the chlorin, and from this he calculates the amount of silver bound by the chlorin and from this the chlorin content. The article is in English.

**Motor and Reflex Disturbances in Herpes Zoster.**—In Ahlen's two cases the motor and reflex anomalies corresponded to a localization of the disease process in the sixth to ninth dorsal segments, while the sensory phenomena corresponded to the fifth to the tenth. (In French.)

**Essential Hypertension.**—No albuminuria or other complications were present in Kerppola's twenty-six cases of essential hypertension, but in 70 per cent. of these and four other cases the cerebrospinal fluid was under high pressure, with, in a large proportion of cases, pronounced changes, high albumin and sugar and low salt content, but the cell count was normal. Similar findings in the vitreous humor in

glaucoma indicate that in both conditions there is exaggerated permeability of the capillary walls. This is probably secondary to the vasomotor instability in hypertension.

**Bactericidal Substances in Serum.**—Wulff reproduces the plates showing how paratyphoid and typhoid immune serums protect paratyphoid and typhoid bacilli against the bactericidal agents in normal human and guinea-pig serum. After inactivation by heating, the bactericides for typhoid bacilli could be reactivated by addition of complement, which suggests that they are normal bacterolysins. The bactericides for paratyphoid bacilli and meningococci could not be reactived and hence they are probably alexins. (In English.)

**Causes of High Blood Pressure.**—Faber's charts demonstrate that the average blood pressure in 1,000 healthy soldiers was 119 mm. mercury (Riva Rocci). A rise in blood pressure seems to be the first appreciable manifestation of the approaching menopause. Ordinary treatment "to reduce" causes a drop in the blood pressure in 37.5 per cent., both men and women. In three men and seven women nothing to explain the high blood pressure could be discovered. In 69 per cent. of the men, kidney disease or arteriosclerotic processes were evident but only in 15 per cent. of the women. He tabulates the data from several hundred subjects.

**Incubation of General Paralysis.**—Wiesel relates that in 163 men and twenty-five women—out of a total of 321 men and 115 women—all with general paralysis, the date of the first infection with syphilis was known. In 27 per cent. the interval was more than twenty years. In 19 per cent., less than ten years, the average over sixteen years. No connection could be discovered between the length of the interval and the age at infection, the sex, the intensity of the mercurial treatment, heredity, stigmata of degeneracy, physical robustness or debility or addiction to alcohol. The only conditions which seemed to have a possible influence on it were overexertion, worry and epidemic influenza.

## Hygiea, Stockholm

86: 609-672 (Sept. 30) 1924

Technic for Serial Plaster-Paraffin Casts of Anatomic Specimens. G. Backman and L. Krastin.—p. 609.
*Cripples in Northern Sweden. A. G. Wide.—p. 616. Conc'n. Medical Study Trip to England and Scotland. G. Bauer.—p. 624.

**Census of Cripples in Northern Sweden.**—This is a comprehensive research from the standpoints of etiology, prevalence, welfare work, the financial aspect and prophylaxis of disability from any cause, covering a large area, with a stable population.

86: 673-720 (Oct. 15) 1924

*Backward School Children. A. Tamm.—p. 673.
Improved Optical Goniometer. G. Backman.—p. 706.

**Backward School Children.**—Tamm found an unexpectedly large proportion of word blindness among the 736 children in Stockholm that had been sent to the school for backward children. The word blindness was of three types, visual, auditory and motor; with the motor form the children seemed unable to form the letters in writing. In one family the father and one son presented the visual, another son the auditory type of verbal blindness. In thirty-three cases there was a psychopathic tendency, but in twenty-six the backwardness was due to difficulty in learning to read and write. Most of those in this group were good in mathematics and in writing figures. The close resemblance between congenital verbal blindness in children and the alexia and agraphia from disease in adults suggests the same localization in the brain. He emphasizes the importance of early recognition of the congenital anomaly for proper training.

## Norsk Magazin for Lægevidenskaben, Christiania

85: 808-904 (Oct.) 1924

*Gonococcus Sepsis. E. Bruusgaard and T. Thjøtta.—p. 809.
Two Epignathous Monsters. G. Lütznow-Holm.—p. 819.
*Bleeding from the Umbilicus in the New-Born. G. Schaanning.—p. 824.
Advantages of Tuberculin Salve Tests. J. Mayrhofer-Grünhübel.—p. 832.
Sarcoma in Mediastinum and Heart of Woman of 50. H. Bjørn-Hansen.—p. 835.
Two Cases of Melanotic Tumors with Metastases. F. Harbitz.—p. 838.
Sources of Error in Hematologic Research. T. Brandt.—p. 844.
*Artificial Arms. E. Platou. Supplement, pp. 1-121.

**Gonococcus Meningitis with Purpura.**—The young man was brought to the hospital as a case of purpura, but gonococci in the blood and spinal fluid corrected the diagnosis to gonococcus sepsis with meningitis and purpura. The gonococci were cultivated further from the fresh purpura patches with an erythematous aspect. Bruusgaard and Thjøtta regard the dermatosis as the equivalent of metastases in internal organs. Lumbar puncture displayed a notable curative action, and the young man recovered. He was treated with antimeningococcus serum, but no special benefit from this could be detected. The case teaches the importance of examining the very latest efflorences in seeking for the microbian cause of a blood-borne eruption. Even a few hours' delay was enough to make the bacteriologic findings negative.

**Bleeding from Umbilicus of the New-Born.**—Schaanning reports six cases which emphasize that congenital syphilis cannot always be incriminated, and that the hemorrhagic tendency may be arrested by indirect transfusion of blood. The hemorrhage appeared the thirteenth day in one girl baby with severe jaundice, bleeding from the stomach, intestine, skin and navel. The jaundice had evidently induced a transient hemorrhagic diathesis, which was arrested at once by transfusion of 100 c.c. of the mother's citrated blood in 50 c.c. of physiologic saline. The jaundice also rapidly subsided. Two were moribund, and transfusion was not applied in the two other fatal cases.

**Artificial Arms.**—Platou reviews the history of attempts at kinematization of amputation stumps to allow control of the prosthesis. He has applied the Sauerbruch-Anschütz technic in twenty cases, as he is convinced that the Sauerbruch arm is the best available to date. A preliminary plastic kinematizing operation is only exceptionally indicated. It is not needed for heavy work. His and others' experience shows that the younger the subject, the greater the skill acquired with the artificial arm, and hence the greater necessity for the most perfect prosthesis when the arm is amputated before the age of 35. With two exceptions, all his patients are using the artificial arm in their daily work. All but twenty-one of his sixty-five illustrations are original.

## Upsala Läkareförenings Förhandlingar, Upsala

29: 345-434 (Sept. 16) 1924

The Pulmonary Vascular System and the Mode of Ramification of the Bronchi. G. Backman.—p. 345.
Experimental Study of Action of Methylene Blue. H. Lundberg.—p. 409.
Conceptions of Nature of Nerve Functions in Different Historical Periods. C. F. Göthlin.—p. 421.
A Human Double Embryo of Sixth Week. Ysander.—p. 428.

30: 1-194 (Sept. 30) 1924

*Pharmacodynamic Study of Atropin and Epinephrin. E. L. Backman and H. Lundberg.—p. 1.
*Importance of Calcium and Potassium Ions for the Action of Veratrin on Mammalian Intestines and Uterus. E. L. Backman.—p. 117.

**Pharmacodynamics of Atropin and Epinephrin.**—Backman and Lundberg experimented extensively on rabbits, cats, guinea-pigs, weasels and rats, and on the isolated and surviving organs. All the experiments confirmed that atropin has an antagonistic action to epinephrin in respect to the effect of the latter on the terminal fibers of the sympathetic motor system. In all these nervous elements belonging to the sympathetic system, atropin paralyzed the sensibility to epinephrin. In the kidneys, atropin inverted the normal vasoconstrictor action of epinephrin to a vasodilator action. A comprehensive bibliography is appended.

**Pharmacodynamics of Veratrin.**—The results obtained by Backman in his experiments on preparations of rabbit intestine and of rabbit and guinea-pig uteri, indicate that veratrin has a general stimulating action on the terminal fibers of the sympathetic and parasympathetic systems, on the intestinal glands and on the muscle cells themselves. Potassium ions inhibit this motor effect of veratrin; calcium ions check it only slightly or exaggerate it. Veratrin acting on the uterus caused an inversion of the normal mode of action of potassium and calcium ions, the former acting antagonistic to the veratrin, the calcium ion reenforcing its action. Eight pages of bibliography are given.